

# Dun's Review, International Edition

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Correspondence regarding any topic of international trade interest is invited from readers of the Review and contributions on such subjects, if available for publication, will be paid for at space rates. Photographs of commercial scenes will be purchased, if suitable for reproduction. Manuscripts and photographs not used will be returned promptly if postage is sent for that purpose.



Highway Lift Bridge Across the Cape Cod Canal—Railroad Bridge in Distance

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House of Ex-President Grover Cleveland at Buzzard's Bay Entrance to the Canal





## THE CAPE COD CANAL NOW OPEN FOR COMMERCE

Eight Miles Long and Costing \$12,000,000, it will Enable Shipping to Avoid the "Graveyard of the Atlantic," which has Caused 2,000 Wrecks in Half a Century

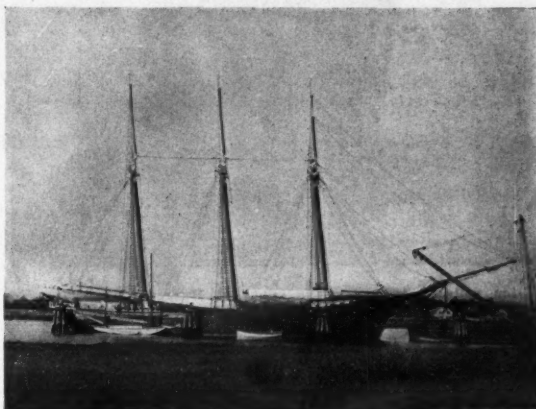
By L. M. Norton, Assistant Editor of "Current Affairs," Boston, Mass.—Illustrated from Photographs Loaned by Cape Cod Construction Company, New York

**W**HILE the attention of the world has been focused on the construction of the Panama Canal and its attendant problems, work has been going steadily and quietly forward, during the last five years, on another important ship canal on the American side of the Atlantic which is to become as essential a factor in the coastwise traffic of eastern United States as the "big ditch" is to be in trans-continental transportation. But a fifth of the length of the latter, the Cape Cod Canal in Massachusetts, which was opened to commerce July 28, will be, relatively, as representative of commercial economy as will the now famous cut through the Isthmus. It will occupy an important place in the list of the world's man-made waterways, which include Panama, Suez, Kiel, Manchester, St. Mary's, the old Erie and the enlarged New York Barge canals.

The Cape Cod Canal will shorten the distance between New York, and the ports south of it, and Boston and other eastern points seventy miles; which implies a saving of time amounting to four hours a single trip for steamships, and four days in the round trip of the numerous schooners and barges, laden with coal, lumber, building materials, oil, ice and other bulky cargo which are continuously plying between these important ports. The operating cost of each trip will, consequently, be materially reduced. Furthermore, a particularly dangerous route, which in half a century has been the cause of nearly two thousand wrecks and cost the lives of six hundred persons, will be avoided.

A glance at the map of the eastern coast of the United States shows a hook-shaped peninsula jutting out from the main portion of the State of Massachusetts. The name of Cape Cod, originally given to the end of this

at the elbow, terminates quite appropriately in a threatening fist. For trouble and danger are more often present than absent in the perilous waters that surround Cape Cod, and all that storms, fog and shoals—singly and in combination—can do for navigation is accomplished along its coast. The region has come to be known among sailors as the Graveyard of the Atlantic, and the records of the



A 500-ton schooner anchored in the Cape Cod Canal, six miles from the western approach

past fifty years afford evidence that the gruesome title is well deserved. During that period disasters to ships at this point have averaged 35 per annum, of which 15 were lost; the approximate loss of property being half a million



Steam shovels at work removing material in the middle section, showing method of excavation throughout the entire length of the canal

peninsula, has come to apply to the entire low-lying strip, sixty-five miles long, on which are many towns and villages, the whole constituting one of the fourteen counties of the State. In doubling this somewhat attenuated projection, vessels sailing from New York to Boston take a circuitous route, following a rectangular course that boxes in, as it were, the long arm of land, which, crooked

dollars yearly. An average of twelve persons a year have lost their lives in these wrecks.

To provide a shorter route and a safer one, the Cape Cod Canal has been cut through the peninsula at the point where it joins the mainland, really transforming it into an island. The canal provides a direct passage from Cape Cod Bay to Buzzards Bay. It is eight miles long and is

dredged to a depth of 25 feet at low water. The minimum width at the bottom is 100 feet; at the surface it is 250 feet. The approaches are 250 and 300 feet wide, the wider one being at the eastern end. There are three passing



2,000-ton railroad bridge across canal at Buzzards Bay. Can be opened in 57 seconds

points with a minimum width of 200 feet at the bottom and 350 feet at the surface. No locks are required, though there is a difference of nearly five feet in the height of the tide in the two bays, but the incoming and outgoing tides so offset each other as to form a current of only two and a half knots at the maximum.

A channel 30 feet deep and nearly four miles long leads to the canal through Buzzards Bay. A breakwater 3,000 feet long has been built of 400,000 tons of granite in Cape

than 20,000,000 tons, are carried around Cape Cod on the outside route annually by some 25,000 vessels representing a total net registered tonnage of 25,000,000. It is likely that the bulk of this traffic will be diverted to the new canal.

Coal for the use of New England industries is the largest item of cargo tonnage that rounds the Cape. There are fifteen coal companies engaged in the trade between the points where the commodity originates and New York, Boston and eastern ports. The coal, to the amount of 11,000,000 tons annually, is carried in steam colliers and towed barges. By the outside route barges average one and a half round trips a month between Boston and Newport News, a distance of 524 miles. By the canal route, there will be an average saving of two days each way, which will enable them to make two round trips a month, thereby considerably increasing the earnings of the companies that operate them. The 4,000-ton steam colliers will be able to make four round trips a month with a corresponding financial advantage.

The necessity for a canal across Cape Cod has always been recognized. In the early days of the Plymouth Colony, 1623-1627, the English colonists endeavored to establish water connection with the Dutch colonists on Manhattan Island, but were unable to meet the expense of creating a waterway across the cape. During the eighteenth century the question of a canal was frequently one of public discussion. Early in the Revolutionary War, General Washington sent an engineer to ascertain if it would be feasible for him to carry his army by water from Boston to New York across the cape and so gain a march on Lord Howe. The Continental Congress was urged to construct the canal, but without avail. Several surveys were made during the nineteenth century, and charters were granted in 1870 and 1891, but were allowed to lapse without anything being done.

The canal that is now an accomplished fact has been constructed under a charter granted to the Boston, Cape Cod and New York Canal Company in 1899. In 1906 Mr. August Belmont became interested in the project and, recognizing its importance, organized a syndicate of promi-



Partially excavated canal showing glacial formation with boulders. The canal is now practically completed throughout its entire length

Cod Bay, the approach at this end being nearly a mile long. Highways have been constructed on either side of the canal and bridges thrown across at three points. The new waterway will be equipped with all modern aids to navigation, and will be thoroughly lighted at night so that vessels can use it then as well as in the daytime.

Half a million passengers, and cargo aggregating more

ment men to finance it. The enterprise is wholly a private one, and represents an outlay of \$12,000,000. Work was begun on the canal in June, 1909. There were no serious engineering difficulties to surmount and construction has gone forward steadily. The canal will be open to craft of light draft this summer and the dredging completed to the twenty-five-foot depth during the autumn.



## LEIPZIG'S FAMOUS WHOLESALE FAIRS

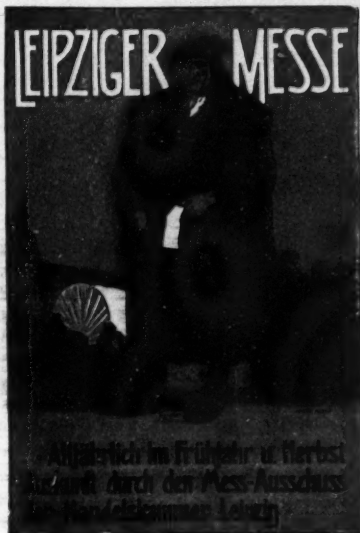
Origin and Present Development of these Remarkable  
Fairs and their Importance in International Trade

**D**URING the early summer many thousands of tourists from all parts of the world visited the city of Leipzig, in Saxony, for the purpose of attending the International Exhibition of the Book Industry and the Graphic Arts. This enterprise, which was in many respects the most important and interesting world's fair held this year, was only an incident in the far-reaching commercial activities of this busy German city. The book trade is without doubt first among the various branches of industry and commerce that have given Leipzig its population of over 600,000. This comprises the publishing industry and the commission book selling trade, the latter having branches or agencies in every part of the world. Leipzig is also the most important center in the German Empire for the retail and second hand book trade, the print selling trade and the music trade, so that visitors to the Exhibition this year no doubt found fully as much to interest them in the book and printing line outside of the exhibition as within it.

During the Middle Ages Leipzig became renowned throughout Central Europe for its retail fairs. Originally these fairs afforded a means of distributing all kinds of merchandise, including furs, leathers, cloth and dry goods, raw wool and cotton, groceries, china and glassware, and an immense number of other lines. Early in the 19th century, however, the character of the fairs gradually began to change and such lines as groceries, wool and cotton disappeared, while the other branches became more important. At the

same time the fairs themselves ceased to be retail distributing centers, but were transformed into sample stock exhibitions for the wholesale trade. At present, and for many years past, this has been the system in vogue at Leipzig, goods being offered for sale through the exhibition of samples and buyers placing their orders for future delivery. These sample stock exhibitions now comprise upwards of 650 different branches of industry and are attended by buyers from every part of the world, the total number registered in a single year exceeding 15,000. Of these the greatest numbers attend the Easter and the Michaelmas fairs, and the number of sellers exhibiting is also greatest on these two occasions, at present exceeding 4,000 for each fair. There are, however, many other fairs held at Leipzig during the course of each year and it is probable that the total number of buyers far exceeds the number given above, as many neglect to register.

The most important of all the fairs are those relating to the fur trade and industry, of which three are held annually at Leipzig. The first is held at New Year's, the principal business being done in American and Russian furs, and the Leipzig fur trade laying in its stock at this season. Then comes the Easter fair, which is the most important of the fur fairs for international distribution, while the Michaelmas fair is chiefly attended by German distributors. Leipzig at present ranks with London as the most important fur center in the world, its wholesale houses now having branches or



Poster of the Leipzig Fairs

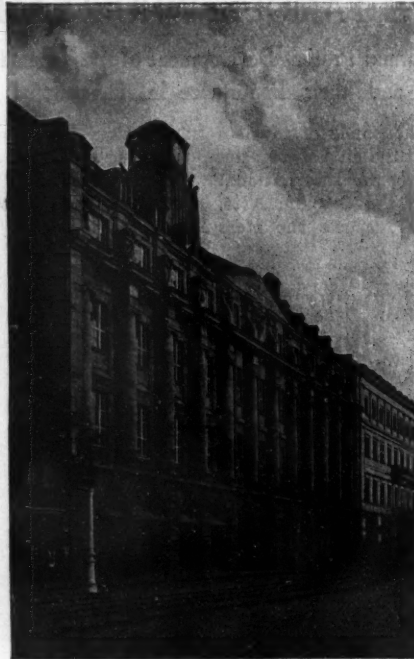
The new City Hall at Leipzig



agents in all the leading fur producing and consuming countries.

The other industries exhibiting systematically at the Leipzig fairs comprise so wide a range of articles that no complete enumeration is possible in the space here available. At the New Year's fair, which lasts from the 3d to the 16th of January, leather and textile goods are displayed as well as furs. During the Easter season there are two great fairs, the Easter Fore-Fair (Oster-Voremesse), which begins about the 2d of March, and the Easter Fair (Ostermesse), which in 1914 lasted from April 19th to May 10th. At the former the exhibits cover an immense variety of articles, including sample stocks of ceramic, glass, metal, wood, paper, leather, india rubber, bone, and celluloid goods, articles of art and luxury, house and kitchen utensils, room ornaments, haberdashery and fancy articles and toys, carnival and cotillion articles, puzzles, Christmas tree ornaments, artificial flowers, soap and perfumery, toilet, traveling and sporting articles, writing and drawing requisites, school and office utensils, musical instruments and works, automatic, scientific and trade instruments and requisites, and all kinds of similar goods. The Easter fair is principally for fur goods, leather and similar articles, as well as textile products. The Michaelmas fair (Michaelismesse) begins about August 30 and covers the same lines as the New Year's and Easter fairs. In connection with this there is also held a Stationery Fair (Papiermesse), a Cardboard Fair (Kartonnagemesse) and a Sporting Articles Fair.

Beginning on the first Monday in Lent and the last Monday in June, Bristles Markets are held (Borstenmärkte) and Bristles Fairs (Borstenmessen) are held in



Dresdner Bank Building, in which is located the Leipzig branch of R. G. DUN & CO.

conjunction with the New Year's, Easter and Michaelmas fairs. Other events of national rather than international interest are meetings of the Yarn Exchange (Garnbörse), comprising spinners, weavers and wholesale consumers, which are held four times a year, and the exhibition of the German Furriers' Society which is held in April. In connection with the former there are exhibits of novelties in textile manufactures, samples of textile exports to foreign countries, etc., and in connection with the latter are exhibits and novelties in the fur clothing trade, including linings, trimmings, tools and machines, store window fixtures, etc. The Easter Fore-Fair begins regularly on the first Monday in March and the Michaelmas Fair regularly on the last Sunday in August. Business is chiefly done during the first three days of the fair, although the exhibits remain displayed for an entire week. The Easter fair is more particularly an export fair, foreign clients predominating, while the autumn fair consists principally of German buyers.

The entire traffic of the Leipzig fairs is concentrated in a comparatively small section of the city, many of the principal exhibits being displayed in the two buildings owned by the municipality, the Handelshof and the Städtisches Kaufhaus. In addition to these there are a considerable number of large private exhibition buildings, many of which are situated along Peters-Strasse and on the Neumarkt. Special guides are published to most of these buildings and as far as possible the exhibits are concentrated by different classifications. For example, certain floors of the Handelshof are devoted almost exclusively to glass, ceramic and chinaware, others to household and kitchen utensils, while certain private

The Städtischer Handelshof in Grimmalsche Strasse







Interior of a typical sample room of the Leipzig Fairs

buildings are devoted almost entirely to displays of sporting articles, stationery and the cardboard fair. Musical instruments and talking machines are shown principally in the Peters-Strasse.

The great advantage of the Leipzig wholesale fairs, from the standpoint of the buyer, is that they save him the expense, time and trouble of visiting widely scattered factories. Here—within a few streets, and in a comparatively small number of buildings—he can review the latest products of every industry in which he may be interested. Furthermore, the different industries are concentrated as far as possible on the same street, and frequently in one building, or even on a single floor—thus saving much time

in going about, and greatly facilitating the work of making the necessary inspections and comparisons. Goods are exhibited in their actual form and condition, and their peculiarities and advantages are explained instantly and on the spot to the intending purchaser by expert salesmen or by the manufacturers themselves.

In connection with the fairs the leading German steamship lines offer buyers in every part of the world special rates, not only for the trip to and from their home ports to Hamburg or Bremen, and thence to Leipzig and return, but comprising a more or less extensive itinerary to the leading cities of Germany and the rest of Continental Europe.

Peters-Strasse—during the wholesale fairs many private exhibition buildings are located here



## SUCCESS OF RUBBER CULTIVATION IN BRITISH GUIANA

In Many Remarkable Particulars Conditions in this Colony are Identical with those in the Malay Peninsula, the Leading Rubber-Producing Country in the East

By M. F. Nibrac, of Demerara, British Guiana

AT the present time great interest is being shown in the possibilities of British Guiana as a rubber-producing country and the rubber plantations thus far established give every promise of success wherever the soil is suitable and the trees receive proper attention. Immense areas in this colony are open for cultivation and can be obtained from the Government on very reasonable terms, and even with the existing transportation facilities no less than 9,000,000 acres of land not yet alienated from the Crown are accessible, of which a very large portion is suitable for rubber cultivation. The climate of the colony, while hot, is equable and healthy, and its forests of valuable trees are unsurpassed. Among these, rubber and balata trees are conspicuous. The rubber tree par excellence of British Guiana is the *Sapium Jenmani*, a tree well known for the quality of its rubber. Not only are indigenous trees plentiful, but Guiana is also an ideal country for plantations of *Hevea Brasiliensis* (Para rubber), giving this justly esteemed tree the soil it craves, and reproducing so exactly the climate and surroundings of its natural habitat that it is not surprising to hear of its exuberant growth in Guiana plantations.

*Hevea Brasiliensis*, the true Para rubber, as far as is known, does not grow indigenously in the colony, but plants raised from imported seeds are thriving exceedingly well. It has been successfully demonstrated by experimental plantings throughout the colony that large areas of British Guiana are eminently suited for the cultivation of Para rubber. With a view to ascertaining how Para rubber grows in the different districts in the interior the Government has planted Para rubber trees at the stations of the Department of Lands and Mines. Some trees planted 16 years ago at the Government Agency in the Northwestern District are growing well. Para rubber trees have been planted at Tumatumari, in the Potaro District; at Itaki, on the Mazaruni River; at Arrawak-Matope, on the Cayuni; at Arakaka, on the Barama River, and at Towakaima, on the Barama River, and it has been demonstrated that where the land is suitable it is probable that Para rubber will thrive along the river lands of the colony and over a great portion of the interior forest region.

Para rubber has grown the best on well-drained flat lands composed of a mixture of clay and pegass, and on the bottom slopes of hills. On the heavy clay soils of the coastal region the growth has been slower, but on some



Two and one-half year old rubber tree on the Essequibo Coast, Demerara, British Guiana

of the land at the base of the sugar estates fairly satisfactory growth has been obtained. On some of the river sugar estates rubber is growing well on the backlands. Rich sandy loams seem to be well adapted for the cultivation of rubber, but if the land is of a very sandy nature

Rubber trees (*Hevea Brasiliensis*) on the Hill Estate, British Guiana, showing distance between rows





the growth is generally poor. On pegass lands the results have been unsatisfactory, but on flat lands composed of a mixture of clay and pegass, such as are found at Issororo rubber station on the Aruka River, in the Northwestern District, very promising growth has been made. Excellent results have also been obtained on similar types of land in the Pomeroun, Demerara and Berbice River districts. There is a very large area of land of this type available in the colony for rubber cultivation. It has been demonstrated that Para rubber to be successful must have good drainage and it should be sheltered from the full force of the wind. It grows most satisfactorily in those districts which possess an abundant and regular rainfall and where there is no marked season.



A twelve year old rubber tree (*Hevea Brasiliensis*), East Bank, Demerara River, British Guiana

In a report on rubber cultivation by the Governor of British Guiana, His Excellency aptly observed that the rubber is frequently planted in British Guiana in situations where it would not be planted in the Malay Peninsula. It is generally, after planting, neglected in a way

that would ruin any estate in the East. Unsatisfactory growth here can, in every case investigated by the Governor, be traced either to unsuitable soil or to neglect, and generally to both. Where situation and cultivation have been satisfactory the growth is up to Eastern experience. British Guiana has missed a great opportunity of sharing in phenomenal profits from the rubber industry. In concluding, the Governor, Sir Walter Egerton, K. C. M. G., one of the most able and experienced administrators the colony ever had, stated "the future prospects of that industry, however, are as bright as, or brighter than any other open to agriculturists in this colony and it is lamentable that greater interest is not taken in this cultivation." It is hoped that what has been stated by the Governor may do something towards attracting greater attention to the possibilities of profit it holds out.

The forest region of British Guiana approximates closely to those of Brazil where *Hevea Brasiliensis* grows indigenously. This forest region is a portion of the great tropical rain forest of the South American Continent, where dampness prevails and vegetation is luxuriant. The progress that the young cultivation of *Hevea Brasiliensis* has made in the colony is only what is expected, because the climatic and general conditions are so like those of the natural habitat of the plant in Brazil, but a few degrees to the southwest.

The area under rubber cultivation is steadily increasing. The Board of Agriculture returns show that the area reported as being under rubber in 1907-1908 was 416 acres, while in 1911-1912 the area was 2,259 acres. Fully 1,700 acres of this area are planted with Para rubber, the greater part of the remainder being the indigenous rubber-producing species of sapium. The demand for Para rubber seedlings is keen and it is confidently expected that the area under rubber during the next few years will be very greatly increased, as considerable planting activity is being evinced in the colony.

Tapping of Para rubber has been commenced on the Demerara River, on the Essequibo, in Berbice and at experiment stations at Onderneeming and Issororo. The yields have been satisfactory and the product is of good quality. Some British Guiana rubber was valued at the top price (\$3 per pound) of the market in April, 1910, and at the International Rubber Exhibition held in London in 1911, a sample from an estate on the Demerara River was awarded the silver cup for the best exhibit of West Indian plantation rubber. At Issororo experiment station, in the Northwestern District, over one-fourth of the total number of Para rubber trees at four years of age were of sufficient size to be tapped and the yields are decidedly encouraging.

Plantation of 18 months old trees on the Hill Estate, British Guiana



The latter is being coagulated with acetic acid, and smoking with the fruit of the cokerite palm (*Mazimilianaregia*) is now being practised, as the quality of the smoked product appears to be much better than that of the unsmoked. These tappings have demonstrated that very satisfactory yields are to be obtained from Para rubber in the colony and that the product is of good quality. Since these results have become known there has been a more general desire in the colony to plant *Hevea Brasiliensis*.

Of the 52,777,000 acres of land in the colony, 36,401,000 acres are forest-covered hilly and rolling lands. Of the balance it is estimated that 10,880,000 acres are easily accessible, and fully 9,000,000 of these are unalienated from the Crown. Much of this is suitable for rubber cultivation and for the growth of other tropical products. The terms and conditions under which Crown lands can be obtained for the cultivation of rubber are inviting and the Government offers every encouragement to persons or companies of proved financial standing desirous of cultivating this crop.

Leases can be obtained for areas of any size for the purpose of cultivating rubber thereon for a term of 99 years. No rent is payable during the first 10 years, an annual rent of 20 cents of American currency an acre is charged from the eleventh to the fifteenth years and an annual rental of 50 cents an acre during the remainder of the lease. The lessee is required to plant one-twenty-fifth part of the land with rubber trees, with an average of not less than 60 trees to the acre, each year, and is required to pay a royalty of two cents per pound on all rubber and balata collected during the first 10 years, whether from indigenous or cultivated trees. After the expiration of ten years, if the conditions of the lease have been complied with, the lessee has the right to purchase the land at \$4 of American currency per acre, if he so desires.

The fees payable for obtaining a lease are as follows:

Application Fee .....	\$5.00
Survey Fees:	
Areas up to 500 acres .....	.30
Each acre above 500 and up to 1,000 acres .....	.20
Each acre above 1,000 .....	.10
Registered Fees .....	16.20

The fees must be deposited with the application for the land.

On flat lands which have to be thoroughly drained and also empoldered to prevent flooding at high spring tides, the cost, including application and survey fees, superintendence and purchase of plants, is estimated to be from \$65 to \$70 per acre during the first year and from \$25 to \$30 per acre in subsequent years; but on higher land where the initial expenses of drainage are not so heavy, the cost during the first year could possibly be reduced to \$48 per acre.

None of the rubber estates have so far complained of any scarcity of labor and it is thought that sufficient help will be available for the next five years; but it is believed by many, that with the advance of the industry, indentured labor may have to be obtained from the East on similar terms to those in force with the East Indians indentured on sugar estates.

The labor available for rubber cultivation consists of negroes and East Indians that have completed their indentures with the sugar estates or were born in the colony, while in some districts aboriginal Indians are available. In felling the forest the aboriginal Indians are preferred if they can be obtained; the black laborers are well suited for the work of empoldering and digging drains, while the East Indians, when properly housed, easily settle down and give satisfactory service. Most of the initial work of clearing, draining, etc., is done by task work, while planting and attention to cultivation is usually carried out by laborers earning a daily wage. The price paid for task work in the different districts varies slightly, as also do the wages paid for daily labor. Near towns or any of the village settlements the rate of pay ranges from 32 to 48 cents (American) per diem, and in the more remote dis-

tricts from 48 to 64 cents per diem, as the cost of living is somewhat higher.

British Guiana possesses many features in common with the Malay Peninsula, the largest rubber-producing country in the East, where the companies operating number many hundreds. The area of British Guiana is somewhat more than that of the whole of the Malay Peninsula, and while, of course, the seaboard is nothing like so extensive, a number of large rivers give ample communication between the coast and the interior. The latitude is exactly the same as that of the Malay Peninsula. Although, doubtless, the day will come when the number of rubber plantation companies operating in British Guiana will compare with the number in the Malay Peninsula, at present only a few have taken advantage of the liberal terms offered by the Government.

British Guiana is situated between 1 degree and 9 degrees north of the equator, being in fact, in about the same position north of the equator as the Amazon Valley—the home of the Para rubber tree—is to the south thereof, and, consequently, should be equally favorably situated from a climatic point of view. As regards distance by ocean transit from the world's principal markets in America and Europe, British Guiana compares favorably with any other tropical area in the world where rubber can be grown, not excluding Brazil (Para) and West Africa.

When a few months ago the samples of Para rubber obtained from trees cultivated in this colony were sent to the Imperial Institute, South Kensington, London, the well-known expert, Professor Wyndham P. Dunstan, reported that the Para biscuits from 4½-5 year old trees at Issororo, Northwest District, weighing 1 pound 3 ounces, were found to be small thin biscuits, light brown to reddish brown in color, clean and in good condition. The rubber was slightly weak, but considering the age of the trees from which it was obtained, its physical properties must be regarded as quite satisfactory.

Results of examination: Loss on washing (moisture and impurities) 1.0 per cent.

Composition of dry washed rubber:

	Per cent.
Caoutchouc .....	95.3
Rosin .....	2.0
Protoid .....	2.5
Ash .....	0.2

Commercial valuation: About 3s. per pound in London, with fair average quality; plantation sheets and biscuits at 3s. 1½d. per pound (May 8, 1913).

The Professor stated further that the above rubber is very satisfactory in chemical composition, containing over 95 per cent. of caoutchouc in the dry material, and in this respect it is quite equal to plantation Para rubber from the East. The strength of the rubber will no doubt improve as the trees become older and the product will then be of excellent quality.

Scrap Para rubber from 4½-5 year old trees at Issororo, Northwest District, weighing 13 ounces.

Cakes of scrap rubber varying in color from light brown to almost black, like the preceding specimen, the rubber was slightly weak.

Results of examination: Loss on washing (moisture and impurities) 2.8 per cent.

Composition of dry washed rubber:

	Per cent.
Caoutchouc .....	93.7
Rosin .....	2.5
Protoid .....	3.2
Ash .....	0.6

Commercial valuation: About 2s. 6d. per pound in London, with fair average quality plantation sheets and biscuits at 3s. 1½d. to 3s. 2½d. per pound, and fine hard Para at 3s. 6½d. per pound (May 8, 1913). This scrap rubber is of good quality. It contains a little more rosin, protoids and ash than the biscuit rubber and consequently the percentage of caoutchouc is lower.

Finally it can be said that as there is every probability that in four or five years time a railway will run from the port of Georgetown to the frontier of Brazil, and may be further in time to come, it can be unhesitatingly asserted that the opportunities for laying out rubber plantations in suitable localities will be greatly increased.



## HOW THE UNITED STATES WEATHER BUREAU HELPS COMMERCE

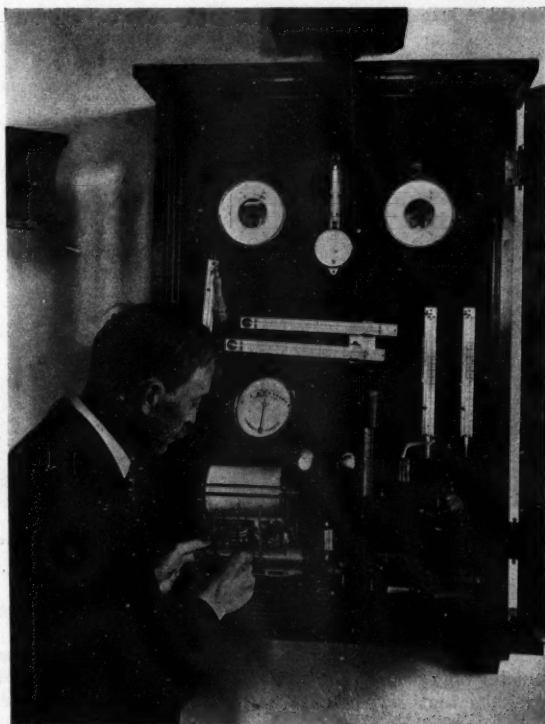
This Important Service is about to be Extended to Cover  
the Caribbean Region and both Panama Canal Terminals

By *Waldon Fawcett, Washington, D. C.*

**W**EATHER forecasts and warnings are of value not merely to mariners on ocean, lake and river and to railway and other transportation interests, but, in like measure, prove beneficial to shippers of a wide range of commodities and to the consignees for whom the shipments are intended. That the weather prophecies have such a wide and varied applicability is the contention of the officials of the Weather Bureau of the United States—one of the foremost weather reporting and forecasting institutions in the world—and there seems to be considerable justification for this claim in some of the recent achievements of the American Weather Bureau in behalf of commerce and industry in the western hemisphere.

Just now the Weather Bureau is taking steps for an important extension of its service that will directly serve

manent adoption of the highly satisfactory weather service which, it may be remembered, was introduced throughout the West Indies at the time of the Spanish-American war in order to aid in the operation of the naval fleets and transports. As part of the new scheme it is planned to locate at some convenient point in the Canal Zone a main weather station which in equipment, etc., will be equal to any station in the United States. Sub-stations will be maintained at appropriate points along the canal in order



Thermometers, barometers, etc., of the types employed by the United States Weather Service

international trade interests. The incentive for this latest development is found in the opening of the Panama Canal and its object is to extend to all parts of the Caribbean Sea and the waters contiguous to the canal terminals the same efficient weather service that is at present furnished in American waters. The purpose of this expansion of the bureau's activities is, of course, to protect the shipping that will use the canal. Incidentally, of course, shippers as well as ship owners will benefit, for the special reports and storm warnings from the entire West Indies and important news from the trade routes that converge at the Isthmus will be communicated direct to shippers just as are the present storm warnings covering American ports and waterways.

In order to make the new Caribbean weather service thorough and comprehensive the officials plan to obtain complete meteorological reports from 16 West Indian stations. This will mean, in effect, the restoration and per-



Forecasters at work in the Weather Bureau at Washington preparing a storm warning

to promptly disseminate the information obtained, and the stations at the Isthmus will co-operate with the various meteorological stations already maintained by the United States Government on various West Indian islands. In addition to the work of the land stations the Weather Bureau plans for the extension of marine reports by wireless from vessels plying the waters of this whole region,



The "Triple Register," one of the most important instruments used in weather forecasting

so that there may be provided the safest possible information covering the entire Caribbean section.

The maintenance of the Weather Bureau costs the American Government upward of \$2,000,000 a year, but this expenditure would be fully justified on the score of the valuable service rendered to trade, commercial and agricultural interests even were there no other benefits accruing. For example, in the citrus fruit district of California it is reported that fruit to the value of \$14,000,000

was saved by taking advantage of warnings issued by the Bureau regarding a cold wave. On a single night there were saved in Florida, oranges, vegetables, strawberries, etc., to the aggregate value of \$100,000, thanks to timely warnings of freezing weather sent out by this unique intelligence service.

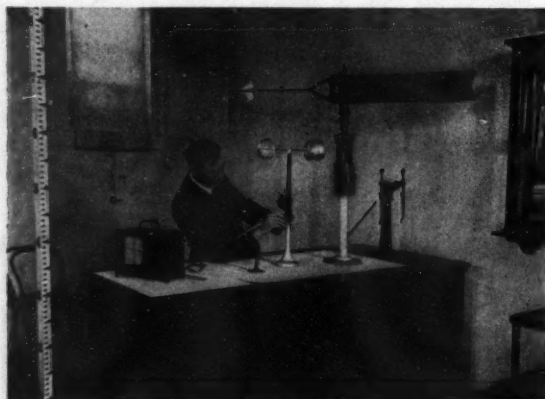
Even more impressive are the estimates made of the savings effected for transportation interests by the circulation of advance information as to sudden changes in the weather. The sailings of an immense number of vessels engaged in oceanic commerce are determined very largely by the Weather Bureau warnings, and it is known that the alarm given with reference to one severe hurricane resulted in detaining in the harbors at various Atlantic ports vessels which carried cargoes valued at more than \$30,000,000. Similarly, warnings of impending floods are of tremendous value to the commerce of the great inland



The rain gauge used at all the United States Weather Bureau reporting stations

rivers of the United States. On one occasion the Weather Bureau gave warning a week in advance of a flood in the lower Mississippi Valley and as a result \$15,000,000 worth of property (including quantities of goods intended for foreign shipment) was removed from localities that were afterward inundated.

The same boon is conferred by the Weather Bureau warnings upon the trade interests that concern themselves



Standard apparatus in use by the United States Government—snow stake, wind gauge, etc.

with railway transportation—and it may be surprising to some readers to note how intimate is the connection between rail traffic in the United States and the international commerce. The bananas which are imported into the United States from Central America in large quantities are an excellent example of various classes of perishable products that, in accordance with warnings, may be protected against temperature extremes by icing or heating as conditions may require. Bananas must be kept at a

temperature of 58 to 65 degrees during shipment, as a temperature below 55 chills the fruit sufficiently to cause a deterioration in quality, while a temperature above 65 inside the car will induce over-ripening. Moreover, bananas generate heat very rapidly after being placed in a car, so that the problem is a delicate one, and the shipper can make his plans to the best advantage only if he knows in advance the actual and expected temperature conditions along the entire line of transit.

Similarly, shippers of meat watch the weather forecasts and shippers of fish and oysters depend upon the reports as a guide to the proper amount of ice to be used, high temperatures being harmful in the extreme to such products. Warnings of a cold wave will invariably induce brewers, winemakers and manufacturers of soft drinks to hold back their shipments until danger from the cold is past. Oftentimes early news of an impending change in the weather enables railroad and steamship companies to so accelerate shipments of perishable goods that they arrive at their destination in advance of the expected unfavorable temperature conditions. Or, if it be found impracticable to thus rush delivery, opportunity is at least given to provide protection en route. Warnings of severe or protracted cold have even induced transportation companies in some instances to refuse to receive consignments of goods likely to be injured by low temperatures. In important producing districts, such as the corn, wheat, sugar, rice and cotton regions of the United States, special



"Instrument Shelter" or observatory, which is a part of all Weather Bureau reporting stations

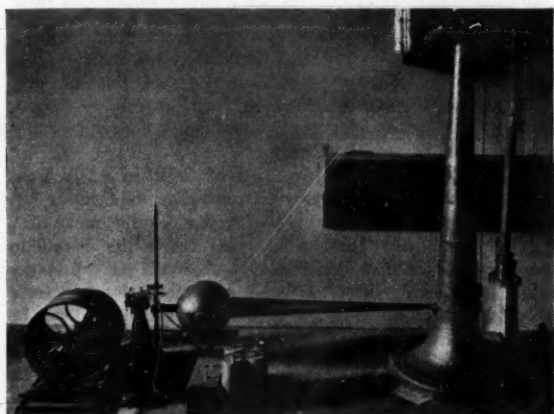
Weather Bureau stations are now maintained for the specific purpose of serving these lines of trade.

So keen is the appreciation of commercial men of the benefits that may be derived from weather warnings and forecasts that stations are now regularly maintained at all the large centers of trade and commerce. The United States Weather Bureau has more than 200 regular observing stations in the United States and Canada and each of these has facilities for obtaining information from correspondents throughout its territory. Then there are the stations scattered throughout the West Indies that are to play so important a part in the enlarged service in connection with Panama Canal commerce, and finally there is an extensive "marine service" which supplements the land system in furnishing the data whereon the forecasts and warnings are based.

The paid vessel weather service, which ranks next to the Panama Canal project as the latest advance in the Weather Bureau's operations, was inaugurated on board 50 vessels sailing between New York and New Orleans and to ports in the West Indies, Central and South America. When 75 miles from the port of departure or the port of entry each vessel radiotelegraphs twice daily observations to the nearest wireless station for transmission to Washington. Additional observations are forwarded as conditions seem to warrant. A vessel weather service has since been put in operation on vessels plying between the Orient and ports



on the Pacific Coast, and this system of keeping tab on the weather is being rapidly extended to all vessels plying the waters of this hemisphere. Special times have been set aside for the dissemination of forecast messages and storm warnings broadcast over the ocean and this plan has proven especially effective since the completion for the United States Government at Radio, Virginia, of the most powerful wireless station in the world, a station with a sending radius of more than 3,000 miles and from which a forecast is sent forth every morning. Officials of the



The seismograph—the ingenious apparatus employed by the Bureau to record earthquake shocks

Weather Bureau at a number of stations on the Atlantic and Pacific coasts, in addition to their regular duties, report all passing vessels, wrecks and marine disasters, and transmit communications between vessels, their owners and others interested. The officials at these stations have in repeated instances discovered disabled vessels drifting toward rocky shores, and by timely calls for tugs have prevented loss of vessels, lives and cargoes.

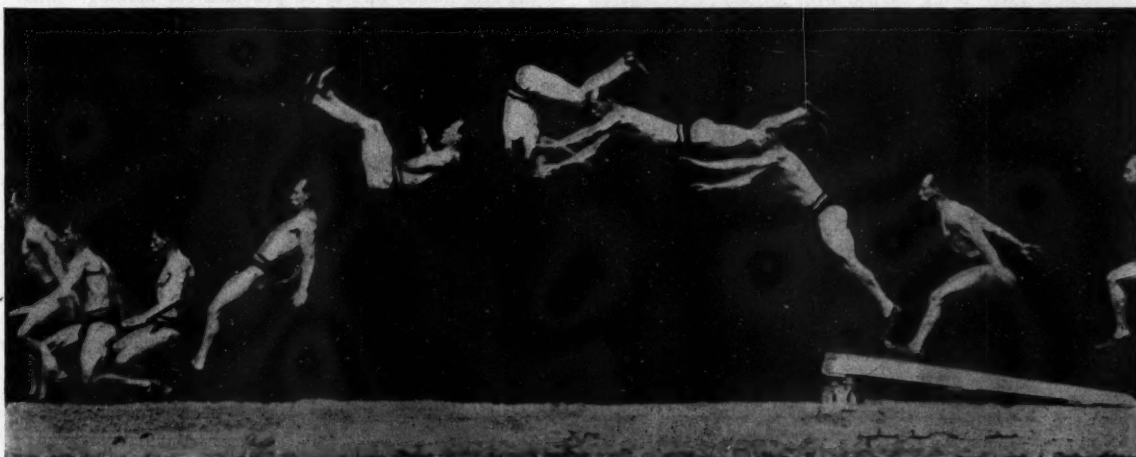
The apparatus used at Weather Bureau stations for recording weather conditions is largely the result of inven-

now in use will record rainfall to the fraction of 1-100 of an inch. A newly invented compensated barometer gives an automatic record of pressure by means of clockwork.

For some time past the Weather Bureau has maintained several seismographs which record earthquake tremors, and it is planned that seismological observations shall be introduced as a regular feature of the enlarged service incident to the needs of Panama Canal traffic. In order to contribute to the accuracy of the Weather Bureau forecasts reports are received daily, not only from Canada, Mexico and the various regular stations in the West Indies, but likewise from the Azores, Iceland, the Faroe Islands, Great Britain, Germany, France, Portugal, European and Asiatic Russia, China, Japan, the Philippines, Hawaii and Alaska, so that the field represented by the daily reports extends over practically the entire northern hemisphere. The principal weather reporting stations maintained at the United States Government's expense in the West Indies are located at San Juan, Porto Rico; Basseterre, St. Kitts; Bridgetown, Barbados; Curacao; Kingston, Jamaica; Port au Prince, Haiti; Port of Spain, Trinidad; Roseau, Dominica; Santo Domingo, and Turk's Island. This chain of stations will probably be extended as the new scheme for aiding trade and commerce develops.

#### A CAMERA THAT ANALYZES MOTION

FROM Paris, France, comes the latest and one of the most remarkable inventions in the field of photography. It is a new camera, which, while taking advantage of the principle of the cinematograph, is such a genuine novelty in many ways that it may justly be considered a totally new invention. As is well known, the cinematograph owes its effect to the fact that a series of photographs are taken rapidly on what are virtually independent plates. In the new camera the speed is greatly reduced, and the entire series of snapshots is taken on the same plate. The result is remarkable. Instead of producing the effect of real motion, as is done on the screen, the observer gets an analysis of motion—a series of poses representing the various steps or stages in the performance of the movement. In the accompanying illustration,



Photograph by Underwood & Underwood

The photograph showing ten distinct movements of an athlete as recorded on a single plate of the camera

tions and improvements evolved by the experts of the service. The equipment of practically all the weather stations is identical and includes mercurial barometers, thermometers, wind vanes, rain and snow gauges, sunshine recorders, barographs, thermographs and other devices which make a continuous automatic record of the local weather conditions and changes. An especially interesting weather bureau instrument is the triple register, which automatically records wind direction, wind velocity, duration of sunshine and amount of rainfall. The rain gauge

for instance, are shown no less than ten distinct stages through which a man passes in turning a somersault.

One of the uses to which the new device can be put is to assist instructors in gymnasiums and physical culture schools and trainers of athletic teams of all kinds in indicating to pupils the faults they desire to have corrected. It is often difficult to explain just what these faults are, but by means of a photograph showing the athlete in action at ten different stages of a given movement, it is obviously very easy to point out where improvements could be made.

## A NON-CAPSIZABLE LIFEBOAT

A Craft that Will Safely Carry a Large Number of Passengers, Even in the Roughest Sea

THE equipment of ships with lifeboats and other life-saving apparatus for use in case of wreck, fire, collision or other disaster has always received more or less attention, but since the loss of the *Titanic* there has been a revival of interest in this direction which has resulted in a marked improvement in the means for preserving the lives of the passengers and crews should occasion arise. It goes without saying that the most important part of a ship's equipment of this nature is an adequate supply of thoroughly reliable lifeboats, boats that can be easily and quickly launched under any and all circumstances, that will carry a large number of passengers and that will not capsize in the roughest sea. While the ordinary lifeboats

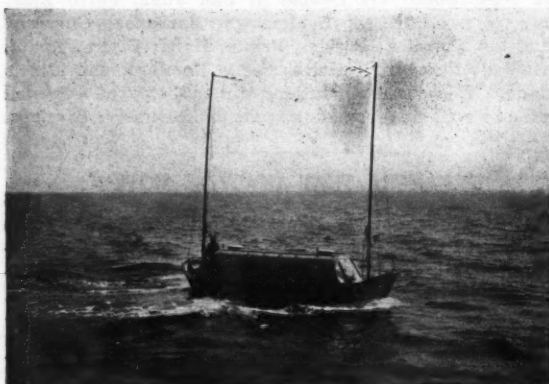


Photo by Edwin Levick

View showing boat with wireless mast raised. Sixty-four people on board

meet to some extent the first two requirements, they are, except when handled by exceptionally skillful seamen, deficient in the last, and there have been many instances recorded of their being turned over by the waves after being safely launched and the lives of all the passengers lost.

capsizable, should such a thing occur, it will right itself almost instantaneously, tests made showing that when turned upside down it will return to an even keel in one second. Provision is made for self-bailing, so if a heavy sea be shipped, it will quickly relieve itself from the water.

The fact that these boats are provided with power is a great factor in their favor, as one or two included in the fleet of lifeboats carried by an ocean liner, could, if necessity arose, gather them into a long tow and hold them riding head to the sea, in the meantime sending wireless messages for help to be picked up by passing ships, the 24-horsepower gasoline engine with which they are equipped supplying ample power for these purposes.

Another feature that distinguishes these boats from those of the ordinary type is that they are decked over, which not alone prevents the sea from getting on board, but saves the passengers from exposure, a very important consideration in cold weather.

The boat shown is the invention of Captain A. P. Lundin, a man whose many years of seafaring experience has made him thoroughly familiar with the requirements of a craft of this class. He has been careful in his design to produce a boat whose dimensions were such as would enable it to be easily handled under such conditions as were likely to prevail when its services were needed, and yet be capable of carrying a maximum number of passengers. The boat itself is thirty feet in length by ten-foot beam, built entirely of steel, with double bottom divided into airtight chambers. The engine operates a propeller in a tunnel built in the after end of the boat's bottom, and drives it at a speed of about six miles per hour. A dynamo belted to the flywheel of the engine generates the current for the small Marconi wireless plant, operating on one-half kilowatt, which, as previously mentioned, can send messages 75 miles and receive them from 100 miles. The "silence cabin" is forward on the starboard side under the steel arched roof of the cabin and is built of balsa wood, which is probably the best substance that can be used for that purpose, while the masts, when not in use, fold down and rest on the cabin roof.

As one of the greatest merits of the new boat is its ability to tow a number of ordinary lifeboats and thus prevent their being swamped by keeping their heads up to the sea, means had to be provided for making connections, which is by no means a simple task in heavy weather. This difficulty is overcome by installing a reel containing

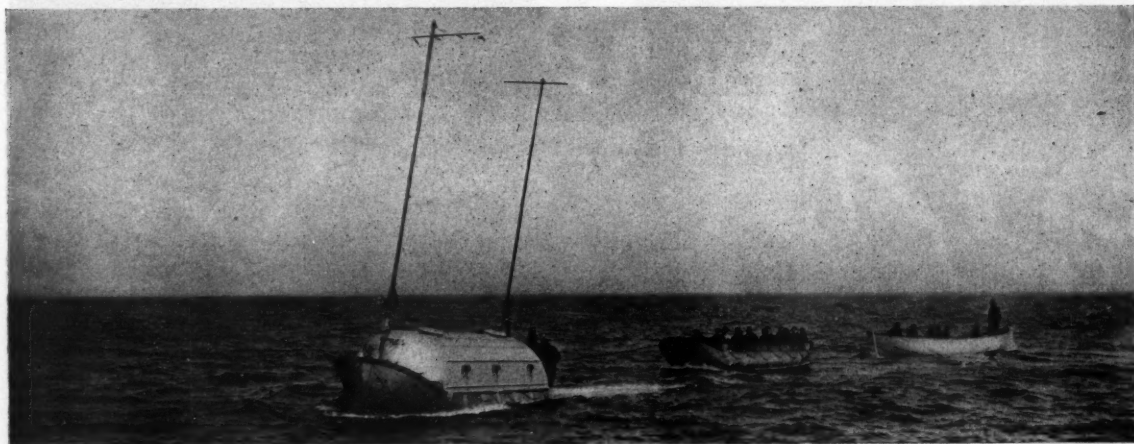


Photo by Edwin Levick

Lundin decked lifeboat, fitted with wireless apparatus, towing two other lifeboats

The accompanying illustrations show a new and novel type of lifeboat, which is reported to be a vast step in advance of all craft of this nature. It is constructed entirely of steel and equipped with a gasoline motor and a wireless outfit capable of sending messages for a distance of 75 miles and receiving them from points 100 miles away. In addition, although the boat is practically non-

about 1,000 feet of strong rope and a line-carrying gun in the bow, by means of which connections can be easily formed with other boats or ships or with the shore. Everything about these boats is of the most substantial construction, and while due attention has been given to the elimination of all unnecessary weight, nothing has been sacrificed to obtain this object.



## ON THE HIGHWAYS OF COMMERCE AROUND THE WORLD



NEW ROUTES BY LAND AND SEA. IMPROVED PORTS AND DISTRIBUTION CENTERS.  
BETTER METHODS AND EQUIPMENT

### THE NEW COAL DOCK AT ST. THOMAS

The West India Company's Coal Dock, Nearing Completion, to be the Finest in the West Indies

By C. T. Mason, of New York—Photographs by  
Lieut. Olsen and J. H. Lightbourn, of St. Thomas

WHATEVER the future holds for St. Thomas as a beneficiary of the Panama Canal—and opinions even on the island appear divided on this score—it cannot be denied that in Denmark there are many who are very optimistically inclined. Nor has this belief in the coming return to the old Danish colony of some of its lost prosperity been purely of a passive nature; on the contrary, it has demonstrated itself in a very practical form, the result of which is visible to-day at St. Thomas in the partially completed coaling dock which, when it is finished, will be the finest of its kind in the West Indies. Indeed, this work, begun a year ago, testifies in an eloquent manner to the firm conviction of its promoters that St. Thomas, lying as it does directly in the path of travel between Europe and Panama, is sure to benefit to some extent, at least, by the Canal traffic. One cannot follow the course of their enterprise, remembering, too, the patriotic spirit associated with it, and not wish that these optimistic people may realize all, or a good proportion of, what they hope for.

The present enterprise, which has been pushed with creditable energy, is but a part of a greater project that the Danish people, desirous of securing a share of the Canal trade, had expected to carry into effect in the island. This undertaking, for which a sum of not less than \$7,000,000 was required, consisted of the reclamation of the entire eastern corner of the St. Thomas harbor, where there is a naturally spacious basin, and the erection there of piers, warehouses, drydock and a breakwater, such as would have made St. Thomas the best equipped port in the Caribbean Sea. Owing, however, to the advisability of keeping the enterprise entirely in Danish hands and carried out exclusively with Danish capital, it was found impossible to raise the required amount—only \$2,500,000 having been

subscribed by the Danish people and some of the citizens of St. Thomas. It was, therefore, impracticable to carry out the original scheme and, as a compromise, the syndicate decided to spend the \$2,500,000 in building and equipping a single large coaling dock which would be capable of accommodating all vessels up to a maximum of thirty feet draught. It is this work that is now being pushed to completion and upon which so much of the fortunes of the St. Thomas people depends.

The syndicate alluded to, and known as the West India Company, is allied in this undertaking with the East Asiatic Company, one of the principal Danish concerns engaged in the shipping business. It is represented at



Bird's-eye view of the harbor and new dock at Charlotte Amalia, St. Thomas, D. W. I.

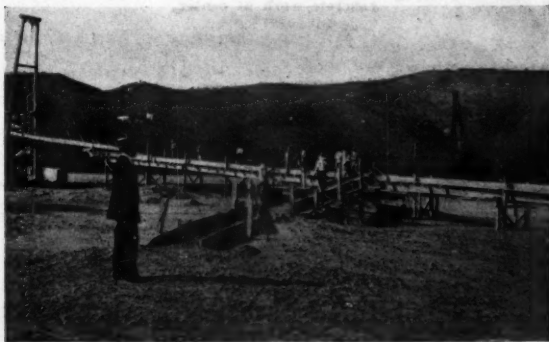
St. Thomas by three most capable engineers from the mother country, Messrs. K. B. Hey, H. Linde and Oluf Olsen; while the principal contracting firm, Messrs. Monberg, Saabye & Lerche, is represented by Baron Lerche and Mr. Kjaer Petersen. Some of these gentlemen arrived at St. Thomas in April of last year and six weeks later the work was begun.

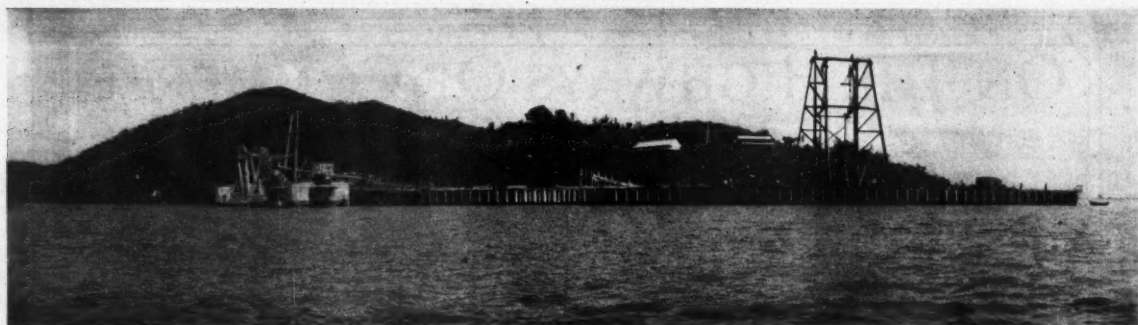
As already stated, the spot selected for the carrying out of these improvements, surveyed two years ago by engi-

Building foundation for pump-house connected with the new coaling dock



Filling-in troughs through which dredged sand is distributed inshore





General view of the new coaling dock at Charlotte Amalla, which will be directly on the route for steamers plying between Europe and the Panama Canal

neers Hey and Olsen, lies to the eastward of the town, where the land curves inward in the form of a perfect semi-circle from Havensight Point to Frederiksberg Point, near the custom house and landing place, almost facing the harbor mouth. Within this area, admirably situated for docking purposes, lies a basin of water some 2,430 feet across and extending inward some 2,000 feet. Half encircling it, and forming a perfect protection in times of storm, are the hills of the island, a spur of which sloping seaward makes the outer headland of Myhlenfeldts Point, which with Cowell's forms the almost land-locked harbor of St. Thomas. It is just within the shelter of Havensight Point and parallel to it that the work is being carried out.

According to the original scheme—a very much more ambitious plan—the entire foreshore of this basin, within the area mentioned, was to have been reclaimed, dock embankments built around the entire curve, with a projecting pier 2,000 feet long in the center, a drydock 800 feet in length at the seaward end, and a breakwater to afford greater protection in rough weather from the South. The present undertaking, however, is considerably curtailed from these plans, and consists in the reclamation of about one-third of the land and the building of a coal dock in the location already mentioned.

As a part of the work it is necessary to do considerable dredging in order to make the approach to the dock practicable for vessels drawing thirty feet of water, and a channel, varying from 500 to 400 feet in width, is accordingly being dredged out. Owing, also, to the narrow margin of the foreshore, scarcely more than a strip at the base of the hills, it was found necessary to build land along the entire portion of the curve, and this has been done with the sand, clay and shells dredged from the channel, the result being a considerable reclamation of ground perfectly suited for the purpose intended. Upon this land will be constructed, as needs demand, the requisite storehouses, etc., and here the coal and oil supplies will be kept. The entire area of built land amounts to some 100 acres, and has been filled in with over 500,000 cubic yards of soil.

As to the dock itself, this has an iron facing of sheet-piling, known as the Larssen system, which consists of trough-like piles, seven-eighths of an inch thick, which alternately turns the trough inward and outward, the piles

being kept together by the edge of one sliding down in a ridge riveted on the edge of the other. They are kept in place partly by being driven into the solid ground and partly by being bolted to a system of wooden piles on the landward side. These wooden piles, of which over 8,000 were used, are of American yellow pine, averaging from eight to fourteen inches in diameter and from sixteen to fifty feet long. The space between the piles will be filled in with soil dredged from the bottom of the channel. The system of iron facing employed has been used to great satisfaction on similar work, although never on such an extensive scale.

When completed the pier will measure 2,100 feet in length, with a depth alongside of 31 feet, and a height above mean sea-level of 8½ feet. Two coal cranes (to begin with) will be installed, each having a capacity of 100 tons an hour. For the lighting and operation of the dock by electricity a power house (built on hardwood piles and with a concrete foundation) has been erected, and here a Diesel motor of 300 horsepower has been installed, and another of similar capacity will shortly be added. The lighting will be done by 50 metallic incandescent lamps of from 200 to 300 candlepower, placed in two rows. A pump-house, for supplying sea water for cooling the motors, has also been put up and connected with the engine rooms. The dynamos, and also the coal cranes, are those of the firm of Titan, of Copenhagen, while the Diesel motors have been purchased from Burmeister & Wain of that city. It is expected that the system, besides supplying all the needs of the dock, will also be called upon to furnish the lighting for the city, now done by gas.

It is the intention of the syndicate to provide oil for vessels patronizing the port, and the necessary storage tanks will be erected as soon as the needs of the dock are properly ascertained.

The work has been carried out entirely by Danish engineers and mechanics, of whom about fifty were brought out from Denmark; while native labor has found employment to the extent of about 300 persons. The pay of these natives is 60 cents a day for unskilled hands and \$1.25 for mechanics. At the rate the work is being pushed forward, it will be completed by the end of October and the dock should be ready for business by the beginning of 1915.

Piling for the new dock, with iron pile facing shown at right, and concrete work at center



Sand elevator at work dredging the channel and filling in dock approach



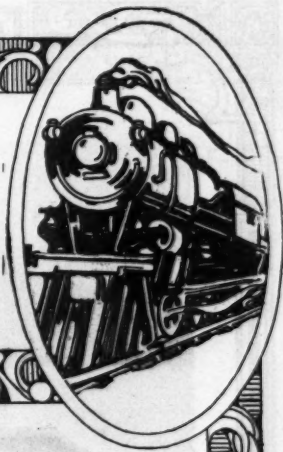
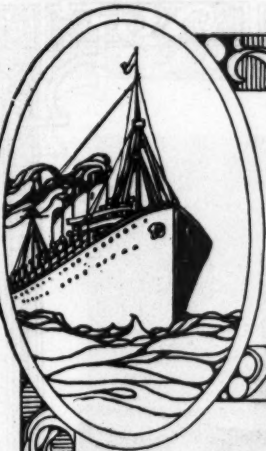


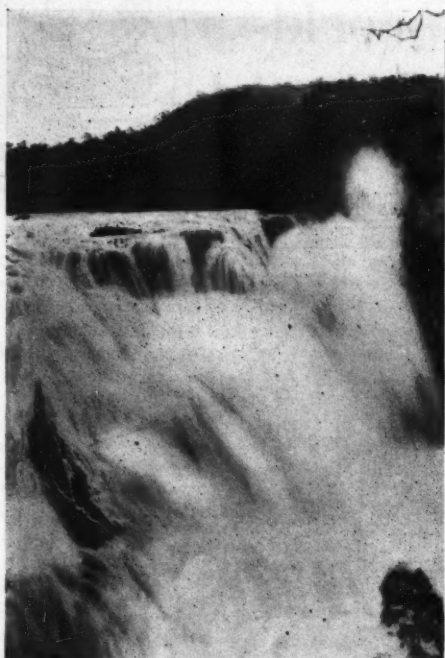
## Scenes of World- Wide Interest



THE PUBLIC LIBRARY AT MELBOURNE, AUSTRALIA

In no part of the world have the Government and people shown a greater interest in popular education and the development of every institution for the advancement of learning than in Australia. The imposing edifice shown above is only one of the many examples of this enlightened and progressive spirit to be seen in every part of the great Commonwealth.





BARRON FALLS, CAIRNS, QUEENSLAND

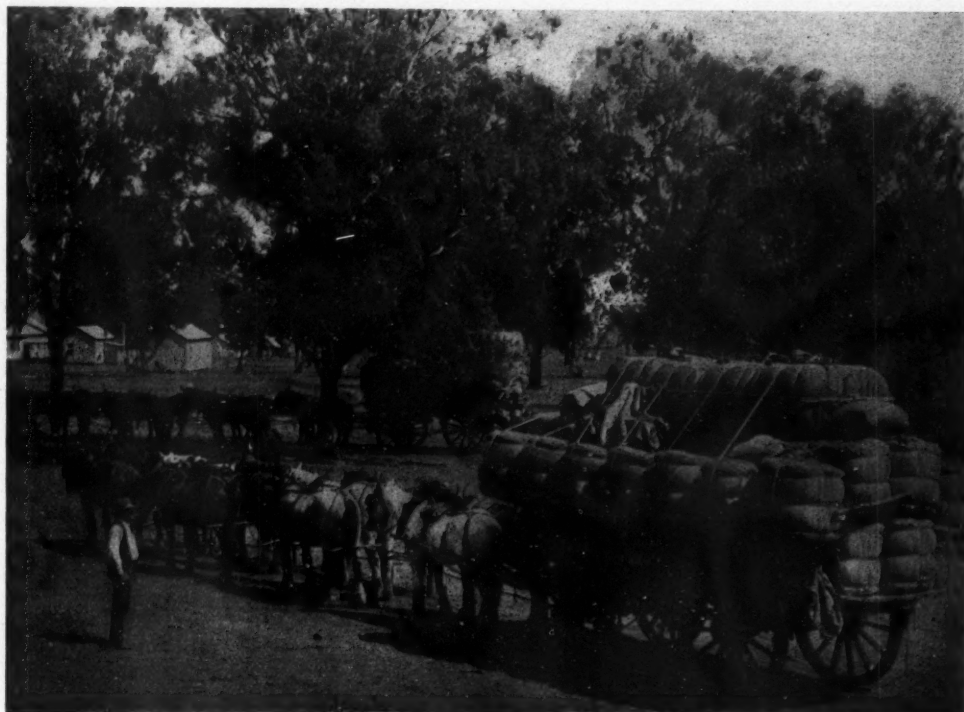


AUSTRALIA'S MOST FAMED QUADRUPED, THE KANGAROO



BUCKLAND VALLEY, VICTORIA, FROM MT. BUFFALO





HAULING WOOL TO MARKET IN AUSTRALIA

Underwood & Underwood, N. Y.



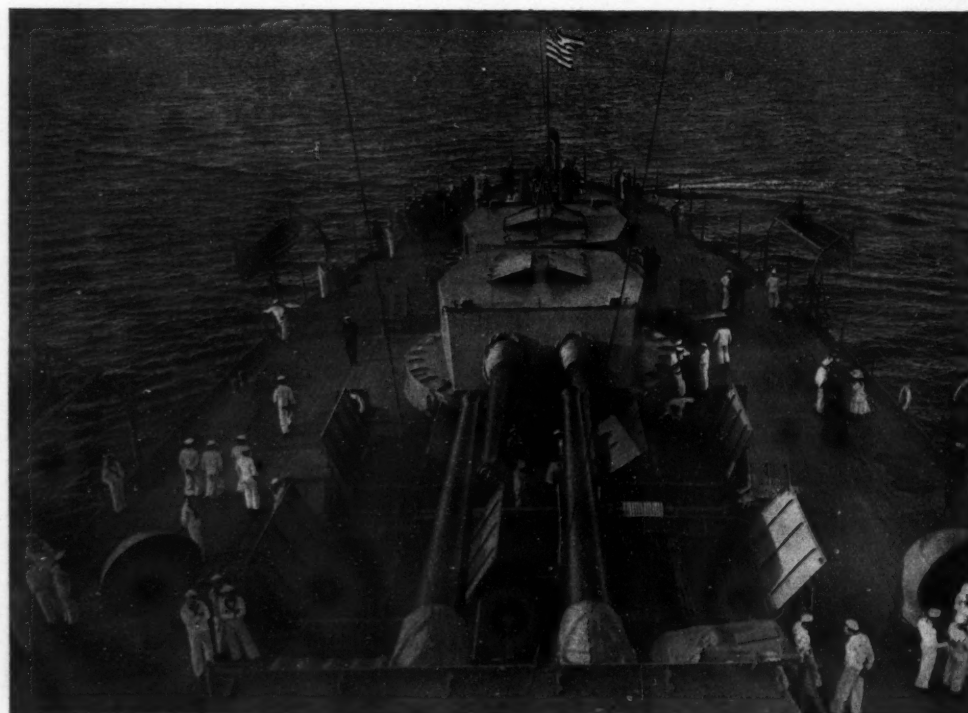
THE ARGENTINE BATTLESHIP "RIVADAVIA"

Underwood & Underwood, N. Y.



Underwood & Underwood, N. Y.

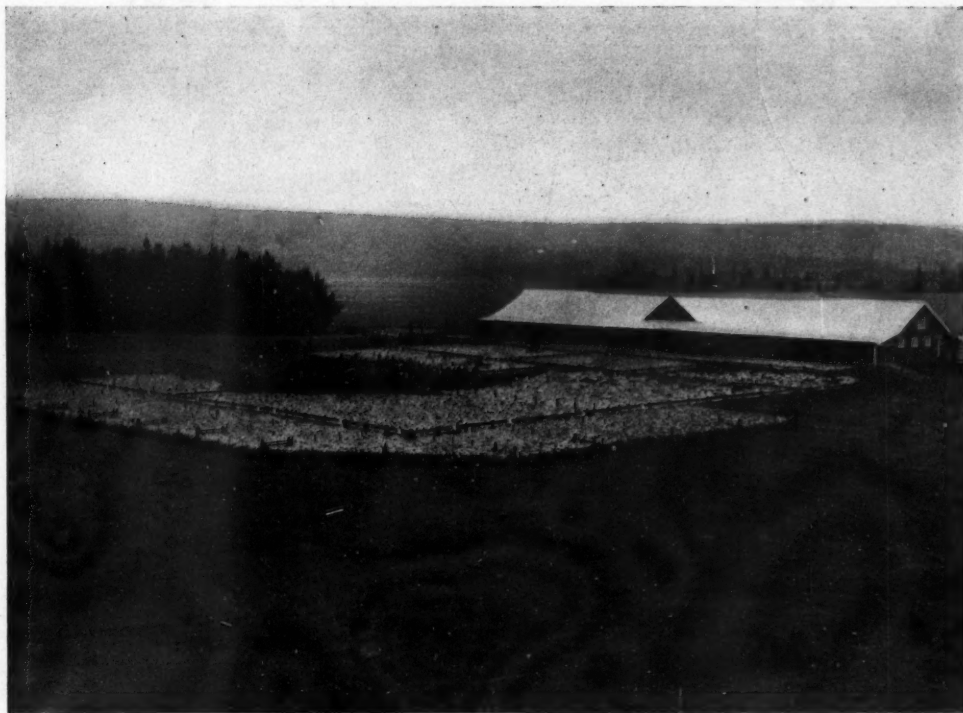
**BATHERS ON THE BEACH AT ATLANTIC CITY**



Underwood & Underwood, N. Y.

**SOME OF THE BIG GUNS ON THE U. S. BATTLESHIP "DELAWARE"**

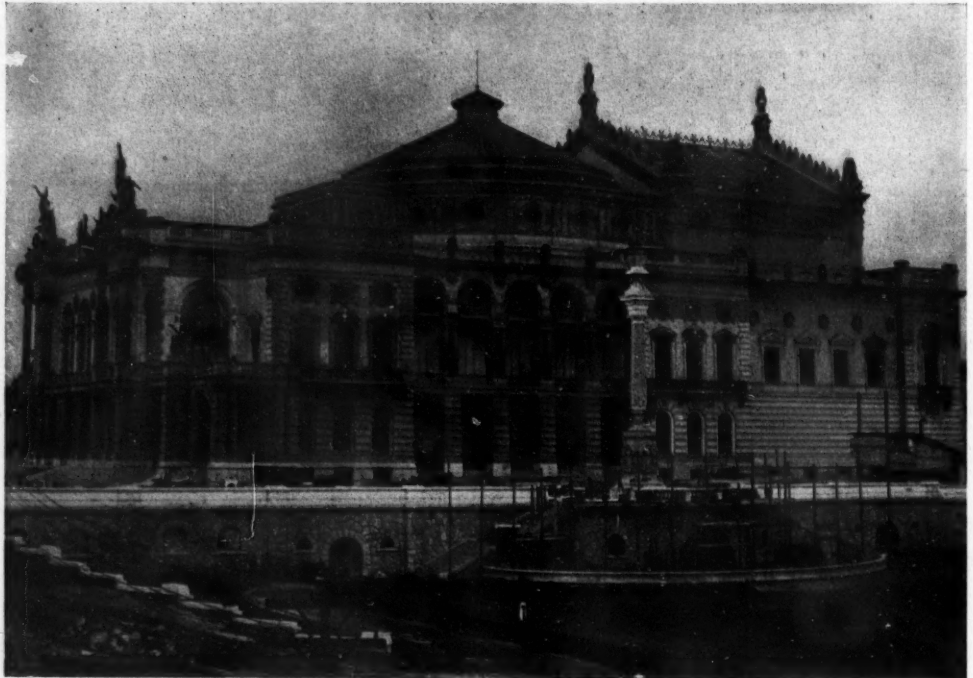




A SHEEP FARM NEAR CANTERBURY, NEW ZEALAND



A HERD OF FINE NEW ZEALAND CATTLE



MUNICIPAL THEATRE AT SAO PAULO, BRAZIL

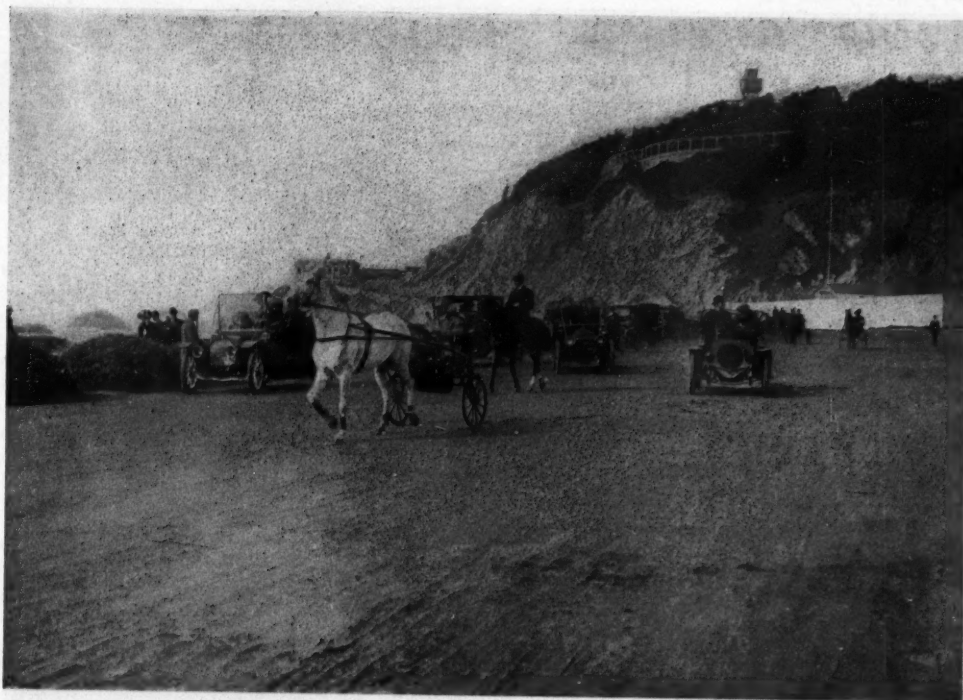
Underwood &amp; Underwood, N. Y.



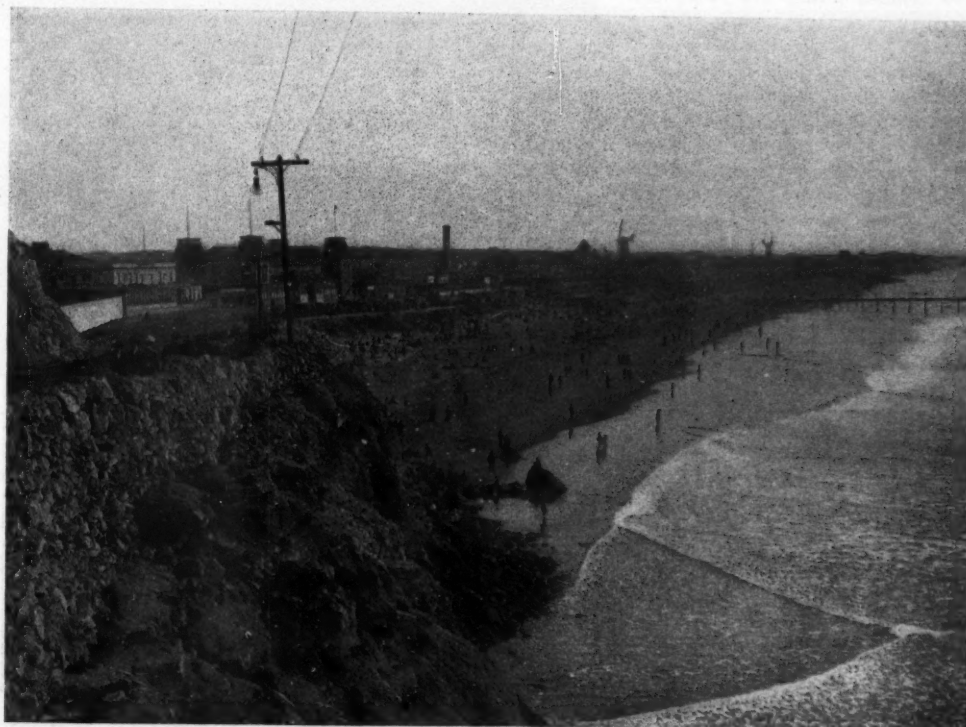
A FIELD OF EASTER LILIES IN BERMUDA

Underwood &amp; Underwood, N. Y.





A POPULAR BOULEVARD NEAR SAN FRANCISCO, CALIFORNIA



VIEW ALONG THE BEACH AT SAN FRANCISCO

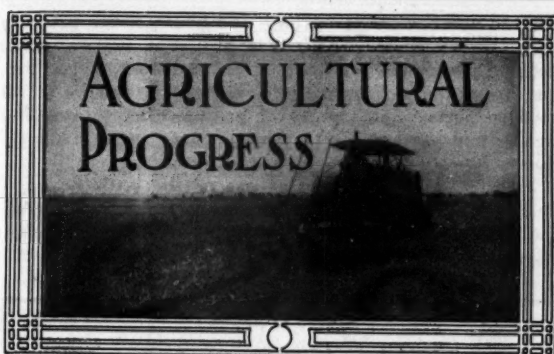


SAILING SHIPS DISCHARGING CARGO AT SAN FRANCISCO



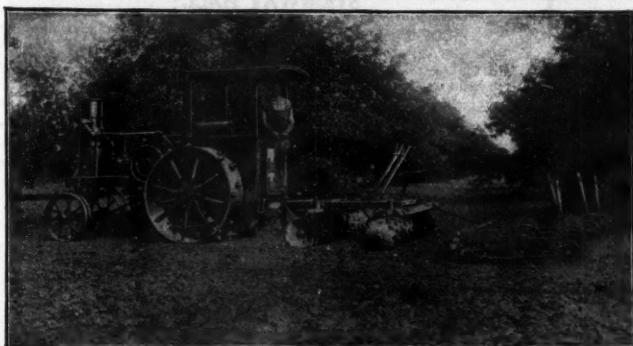
ANOTHER VIEW OF THE BUSY SAN FRANCISCO WATERFRONT





### A TRACTOR FOR SMALL FARMS

**N**O amount of description could illustrate more clearly the change that has taken place in recent years in methods of farming than the two pictures that accompany this article, the upper one showing the old-fashioned way of plowing with a team of oxen and contrasting sharply with the present day system of doing this work with the assistance of a traction engine. Farmers have found that they can do their work more economically and with less exertion by using up-to-date machinery, than with oxen, horses or mules, and in addition can raise bigger crops because they are able to plow deeper and cultivate



Modern farmers use the tractor extensively

more frequently. Besides this, a tractor of improved design costs less for fuel when working than feed for animals, and when not working the expense ceases. Another feature in favor of machinery is the fact that after a hard day's work, the tractor does not have to be cared for and fed, as is the case when horses or mules are employed.

The second of the two pictures shows a small gasoline traction engine especially designed for use on moderate-sized farms. The outfit is shown pulling a 2,100-pound cutaway harrow and two spring harrows through an orchard, and the owner states that it is almost ideal for cultivation between fruit trees, as it will do more and better work of this kind at a lower cost than eight teams of horses or mules.

But the employment of this tractor is not confined to the above purpose, it can be attached to a thresher, to a harvester, to a silo cutter and filler or to any other kind of machinery on a farm that requires power to operate it. It can also be attached to one or more wagons, which, even when loaded heavily, it will drag over any sort of road at a better pace and for a longer distance without stopping than any animal that can be used for that purpose.

The equipment shown is strictly a one-man outfit. It will develop from 12 to 25 horsepower, which will be found ample to pull a 4 or 5 bottom gang plow through the toughest kind of soil, and if desired a disc or tooth harrow as well.

These small gasoline tractors are especially adapted for use in places where help is scarce or high in price, because of the many purposes for which they can be employed to save labor and time.

### PLOWING AND REAPING AT THE SAME TIME

A New Machine that Promises to Greatly Simplify the Production of Small Grains

**M**ACHINERY for use on the farm is being steadily improved and new devices for expediting or reducing the labor incurred in cultivating the crops are constantly being introduced. The latest announcement concerns the production of a machine, which it is claimed, will plow the ground and reap the crop at the same time, and thus go far towards making farming more easy and at the same time result in a marked decrease in the cost of producing wheat, oats and other small grains. In a description of the new machine it is stated that the combined tasks are rendered possible by an exceedingly simple device, and on large farms following of land will become unnecessary.

The new invention consists of attaching a binder securely to the front of an engine. The binder is pushed ahead into the grain, instead of being pulled by horses, and at the same time the plows are drawn behind, which turn the stubble under preparatory to cropping the following season.

Structural steel arms are attached to the front of the steam or gasoline traction engine that may be used, and upon them the binder, which may be of any make, is securely seated, the bull wheel and grain wheel being detached. The binder is driven by sprocket wheels and chain attached to the main drive shaft of the engine, and the reel and other parts, which are operated while the grain is being cut, are manipulated by the engineer in the cab by means of long connecting rods and levers. Thus the entire rig can be managed by one man if desired.

It is reported that the new machine has been thoroughly tested, and the successful results have been followed by the placing of orders for them by a number of farmers who saw it in operation. There is little doubt but the new invention will prove of great value in those sections where labor is scarce or high in price, and in places where there is but little time to plow the land after harvest before the ground freezes. An additional feature of importance is the fact that as an extra plowing will involve but little extra expense, fall plowing will rapidly become more general, for it has been amply demonstrated that when this is done the yield of wheat or other grain will be largely increased.

Those who have seen the machines in operation are loud in their expressions of praise, and the company that has been organized to manufacture them on an extensive scale is confident that they will meet with a very great demand. The machine should prove especially popular in Australia, New Zealand and Argentina.

## IMPROVING PORT FACILITIES AT KINGSTON

New Piers being Built and a Free Port to be Established and Piers Connected with the Insular Railway Systems

OF all the islands in the West Indies, the one that is the most advantageously situated with relation to the Atlantic entrance of the Panama Canal is, undoubtedly, the Island of Jamaica. It enjoys not only greater proximity, but it is also almost directly facing the Canal, while its central location in the path of travel across the Caribbean would appear to give this island a considerable advantage over all the others, and particularly over its sister colonies under the British flag. Much more than either Trinidad, Barbados or St. Lucia, this island to all appearances is most likely to benefit when the new trade routes through the Caribbean and the Panama Canal increase traffic in that sea. It is not forgotten, by those who argue in favor of improving the harbor facilities at Kingston, that most of the steamers to be engaged in the canal trade, and which will pass close of the island of Jamaica, will contribute nothing to its trade and that, moreover, every possible facility will be provided by the Canal authorities both for coaling and repairing vessels at Colón. It is believed, notwithstanding, that Jamaica could be made to offer such advantages as would bring it a considerable increase of shipping and that it is the duty of the Government to see that these advantages are provided for the island and especially the port of Kingston. Meanwhile, it has been decided that vessels entering the harbor shall be free of all dues, and these regulations will be put in force by the time the canal is in operation.

In the mean time, and doubtless in preparation for the expected increase in traffic, the Government, which owns several of the wharves and leases them to steamship companies, has undertaken the erection of a new pier, adjoining that operated by the Hamburg-American Line, and this is now in course of construction. The new pier, which will cost some \$300,000, will be the longest in Kingston and capable of accommodating the largest steamers visiting the port.

To increase the facilities of the Hamburg-American dock, also Government property, it is proposed to extend it sufficiently to accommodate larger vessels and this work will shortly be put in hand. A similar extension, it was recently announced, will be carried out on the Royal Mail wharf and a new freight-house will be erected, this company having determined to increase its service in the Caribbean Sea as soon as the canal is open to traffic.

It has also been about decided to connect the various piers and wharves with the island railroad system, so that cars may be loaded and discharged directly at the piers, thereby considerably facilitating the sending of goods into the interior and the shipment of the island's produce abroad. The track will be laid along the entire foreshore of the city, or where shipping is done, and such land as

will be needed for the purpose and which is the property of the wharves and warehouses will, it is said, be given to the Government for carrying out the work. This linking up of the various piers, so common a feature in all modern ports, should prove of great service to shipping agents and particularly to those engaged in the fruit industry.

Jamaica, already known as one of the leading steamships' junction points of the Caribbean region, will—after these improvements are completed—be more than ever prepared to handle increased traffic in all directions.

*The Fame of the*

# Steinway

the Piano by which all others are measured and judged, is not merely a local or national one. It is international, universal, world-wide, and is the recognition, in the strongest possible manner, of a work of art that is in its line unequalled and unrivalled.

From its inception the Steinway Piano has been known as THE BEST PIANO, without qualification and without limitation.

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Catalogue on Application.

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All Stamp Dealers, Stationers and Toy Department Managers will find "FULTON SPECIALTIES" a profitable and steadily selling line. Special catalogues of Sign Markers and Business Outfits, Stamp Pads, Dating and Numbering Stamps, etc., now in press.

Careful and Prompt Attention to Export Orders

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**ARNICA**  
**TOOTH SOAP**

**ARNICA**  
**TOOTH SOAP**

Guaranteed under the pure food and drug law.

**SANITARY**  
and refreshing,  
cleanses  
and preserves  
the teeth; used  
throughout the  
world for over  
35 years.

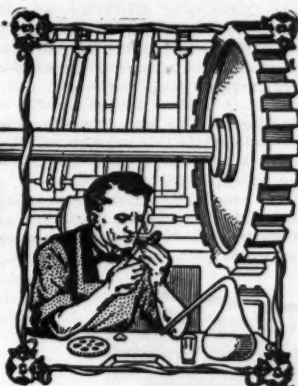
**EXCLUSIVE FOREIGN AGENTS WANTED**

**C. H. STRONG & CO.**  
Established in 1876  
325 W. Madison Street CHICAGO, ILL., U. S. A.



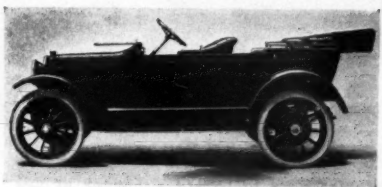
## Information For Buyers

*As it is frequently impossible for advertisers to explain clearly the purpose or peculiar merits of their products in the advertising columns, space in this section is placed at their disposal to enable them to do so. It is proper to add that they, and not the publishers, are authority for the statements made.*



### A Successful Moderate-Priced Automobile

CONSIDERABLE comment has been made on the success of the "Detroit" automobile during the past three years, which, the manufacturers, The Briggs-Detroit Company, of 5004 Holbrook Avenue, Detroit, Mich., state is quite as pronounced abroad



An attractive touring car manufactured by The Briggs-Detroit Co.

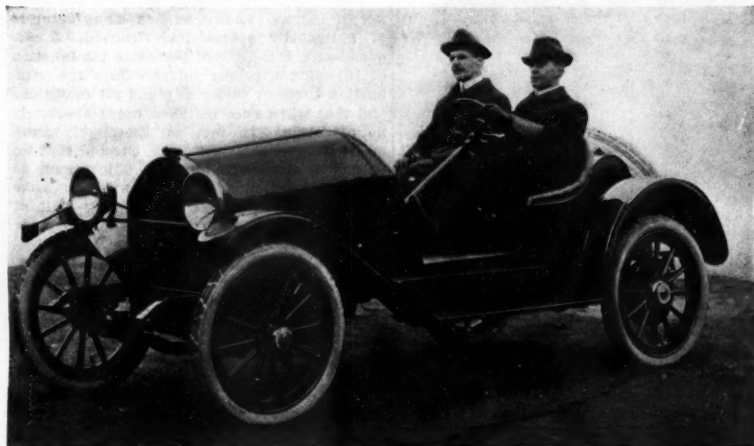
as in the United States. The popularity of this car in foreign countries is claimed to be due to the possession of a number of distinctive features not met with in other self-propelled vehicles. In the first place, this is the only automobile of its class that is provided with ball bearings throughout, and as these bearings are standard in every part of the world they can easily be replaced when necessary, a fact that is universally appreciated by dealers everywhere. Another result of the use of these ball bearings is the great

contact. The reputation of the Detroit is also enhanced by its ample clearance and its ability to climb steep grades; the moderate gear ratio (4:1) enabling it to travel wherever its wheels can find traction.

Particular attention is called by the manufacturers to the great strength of its construction, which naturally recommends it as a car especially suitable for export, as it seldom or never needs repairs, being built to withstand the roughest usage. The full-floating rear axle is unusually rugged and carries a final driving mechanism so powerful that in the three years it has been on the market not a single breakdown has been reported. The steering gear is also abnormally strong, and yet so simple that it is not liable to get out of order.

The Detroit is equipped with a long stroke, ball bearing motor  $3\frac{1}{2}$  by 5 inches; it has a tubular radiator of extra capacity; a multiple disc clutch, running in oil; extra large braking surface (one square inch to every 9 pounds of weight); ball bearings throughout; full floating rear axle; platform springs, which need no shock absorbers, and several other features equally worthy of mention.

The Briggs-Detroit Company is backed by men of many years' experience in the manufacture of automobiles and maintains a foreign department in charge of R. T. Yates, who has long been identified with the export business and is known to automobile dealers all over the world. This export department is thoroughly familiar with the requirements of the foreign field and is able to extend intelligent co-operation to dealers no matter



A handy little "Detroit" runabout, moderate in price, but efficient and durable

saving of power, while in instances where the frame is distorted when traveling over rough roads there can be no binding as these bearings afford point contact and not line

where they may be located. Agents or others desiring further information regarding a moderate-priced but reliable automobile, should communicate direct with the company.

### Automobiles in South America

E. C. MORSE, sales manager of the Hudson Motor Car Company, 7913 Jefferson Ave., Detroit, Mich., will leave shortly for a trip to South America.

The Hudson Motor Car Company officials have for a long time realized the great importance of South America as a field for the sale of their products. More or less effort has been made by them to secure information as to this important field, but efforts in that direction have, up to date, not been entirely satisfactory. At a recent meeting of the board of directors it was decided, therefore, to send Sales Manager Morse to visit Brazil, Argentina, Uruguay, the Guianas and other countries in South America with the purpose of finding out the possibilities and the demands of this big automobile-buying territory. His report to the board of directors will be used as a basis for the future handling of South American business.

In the motor car sales field, probably no department is more difficult than the foreign



Mr. E. C. Morse, sales manager of the Hudson Motor Car Company

end, but Mr. Morse is eminently well qualified for the mission which he is to undertake.

As a sales manager in the domestic field, his training covered a great many years with the prominent manufacturers of the bicycle. He also had many years' training with the National Cash Register Company, becoming a director of that successful organization. During his experience he covered a wider territory in the sale of cash registers than any other man in the company. He personally visited and introduced them in Japan, China, India, the Philippines, Dutch East Indies, and other foreign markets. He also spent a great deal of time in Europe, and for nearly a year made his headquarters at Paris. During this time he personally supervised the business of the National Cash Register Company on the Continent.

Mr. Morse's automobile experience covers some time as sales manager of the E. R. Thomas Motor Car Company at Buffalo, and he has been sales manager of the Hudson Motor Car Company since April, 1909. He is thoroughly well posted on the products of the company and exceptionally well qualified to speak with authority on its policies and products.

### Automatic Metal Polishing Machine

**A**LTHOUGH an attractive appearance may not particularly enhance the merits of an article, so far as its utility is concerned, it is a matter of prime importance when offered for sale, and in no line is this fact more thoroughly demonstrated than in machinery and metal goods. As a rule, manufacturers of metal would give quite as good service in the rough as when they are completely finished, but no manufacturer would dream of placing them on sale until they had been subjected to various processes by

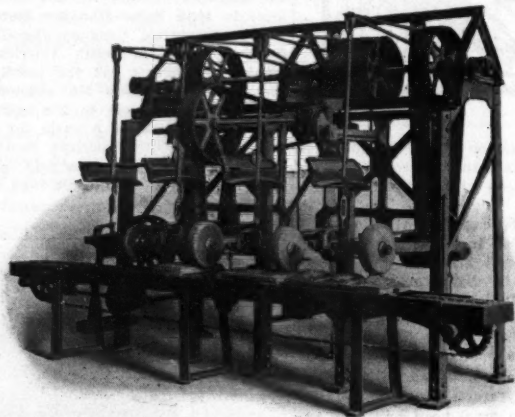
manufacturers of stoves, has almost entirely superseded all other methods for polishing stove plates and other flat surfaces. It is claimed by the makers to do the work of ten men, requires little power and will give the absolutely uniform results possible only with machinery. One man is easily able to care for and operate this machine, which is shown at work in a large stove foundry in one of the accompanying illustrations.

The other illustration shows a machine for automatically polishing hardware and other specialties, that is highly recommended for use where there is a large amount of work

illustrated and described, and manufacturers of metal goods, no matter in what part of the world they may be located, can obtain a copy free of charge upon request. Address Robinson Automatic Machine Company, Detroit, Mich., U. S. A.

### A Positively Automatic Carburetor

**O**WNERS of automobiles, motor boats and gasoline engines generally, who have suffered annoyance from carburetor trouble, will welcome the advent of the Automatic G. & A. carburetor, which is claimed by the

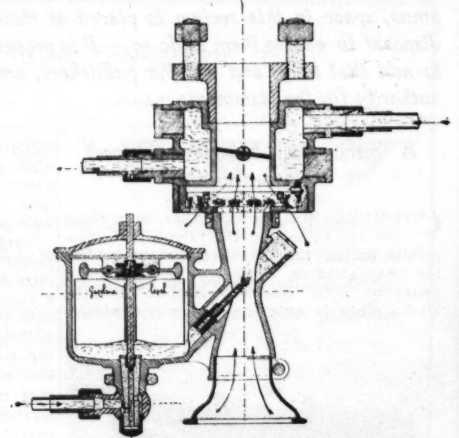


A four-wheel metal polishing machine made by the Robinson Automatic Machine Company

means of which they had received more or less ornamentation. This is sometimes done by plating wholly or in part with nickel or silver, but mainly by polishing, and as the plated parts have to be polished also, it may be safely said that the polishing wheel is one of the most important machines used in the manufacture of this class of goods.

Many attempts to reduce the cost of this expensive work have been made, but it was

of this character. It is made in three sizes, 4, 8 and 10 wheels, and requires respectively 7, 12 and 15 horsepower. The company also call attention to their automatic tube polishing machine, with which the buffing or polishing of iron or brass tubing can be done at the rate of 2,500 feet per day. It can be used on tubing of any diameter from 2 inches to 8 feet in length, and uniform work, which is so difficult to secure with the hand method,

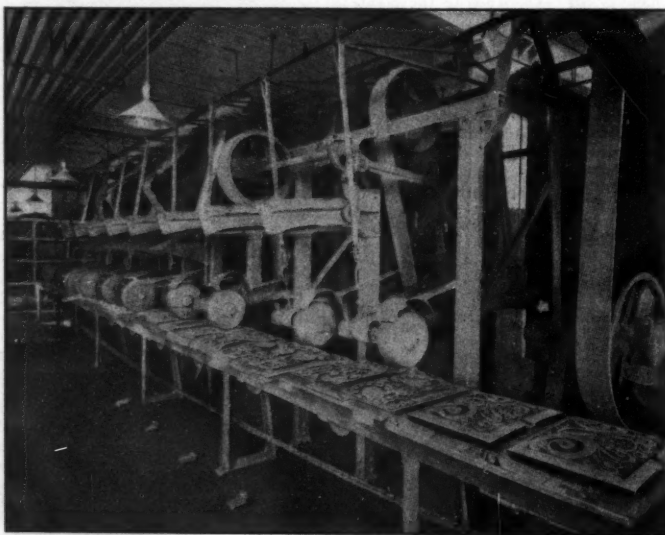


G. & A. carburetor which is claimed by the manufacturers to possess many original features

manufacturers to possess a number of new and original features that place it in the very front rank of devices of this class. As is well known, the object of a carburetor is to mix the gasoline with a certain proportion of air and then to force it into the combustion chamber of the engine in the form of a spray. While this is apparently very simple, it is in reality one of the most complex and difficult problems to be solved in connection with the operation of an internal combustion engine, because of the varying conditions under which the fuel has to be supplied. Thus, the quantity is constantly changing, according to the speed at which the motor is running, while the mixture of air and gas is different on warm days from that in cold weather, in wet from dry weather and in mountains from valleys.

The G. & A. carburetor, which is the product of the well-known French manufacturers of automobile accessories, Grouville & Arquembourg, it is claimed performs the function of injecting a proper mixture into the combustion chamber under any and all conditions and that when once installed needs absolutely no attention. In fact, so thoroughly automatic and reliable is this carburetor that no provisions are made for road adjustment, as no possible circumstance can arise to make this necessary. It operates equally well at high or low speed, in heat or cold, wet or dry weather, and at high or low levels.

The G. & A. carburetor is made in 14 sizes, so that any requirement can be met, either for automobiles, motorcycles, motor boats, aeroplanes or stationary engines. In connection with the above it may be stated that the superiority of this carburetor is demonstrated by the increasing favor with which it is regarded by the leading aeronauts, among those using it being Bleriot, Latham and Santos-Dumont, this being due to the fact that it has eliminated the former troubles arising from the difficulty of supplying the proper mixture at widely varying elevations. Those interested in obtaining what is said by the manufacturers to be a practically trouble-proof carburetor should write to the G. & A. Carburetor Company, 450-452 Sixth Avenue, New York City, U. S. A. for prices and literature.



A Robinson automatic polishing machine at work in a large stove foundry—one man can easily operate this machine

not until the appearance of the Robinson Automatic Polishing Machine that any practical device was produced for dispensing with the old-fashioned hand method or the single wheel for polishing metals. These machines are built for working on all sorts of shapes and surfaces, and they can be supplied for polishing or buffing practically anything made of metal, from rough iron castings to the smallest hardware specialty. One type of these machines, which is extensively used by

is absolutely ensured. Every inch of surface is polished as the tube revolves in its holders and is moved in a horizontal direction, passing beneath all the wheels of the machine at an angle of 30 degrees. The pressure of the wheels on the surface being polished is regulated by an ingenious system of weights, which is at all times under perfect control and can be varied as desired.

The manufacturers have prepared a handsome catalogue in which their machines are



## FA New Motor Car Organization and a New Car

THE automobile trade in all parts of the world will be interested in learning something about the new R-C-H Corporation, which has recently been organized at Detroit—the leading automobile manufacturing center of the United States. The organizers of the new company, under the leadership of the President, Mr. Chas. P. Sieder, have devoted much attention to insuring the permanency of the corporation both from the financial and administrative standpoints and state that every department is in charge of men well known in Detroit business circles and the automobile industry. Mr. Sieder, the President and General Manager of the com-

pany, has for many years been the head of the Sieder Mfg. Co., manufacturers of automobile tops. The Vice-President and Assistant General Manager is Mr. Albert H. Collins, formerly Michigan and Indiana sales distributor for the R-C-H car, and prior to that Sales Manager for two other well-known makes of automobiles. The Secretary and Treasurer of the company is Mr. Allen F. Edwards, formerly Vice-President and head of the Purchasing Department of the Detroit United Railway and director of the Union Trust Company. The Sales and Advertising Departments are in charge of Mr. V. S. Hibbard, formerly Assistant Sales Manager of the old R-C-H Corporation, while the Service and Purchasing Departments are managed by Mr. T. F. Drews, who formerly held a similar position with the Hupp Motor Car Company. The new company is in no way connected with the old corporation save as purchaser of its property.

The firm state that the new touring car they are now putting on the market embodies all of the latest features of body design, equipment and chassis construction, many of which were never before considered possible on a popular-priced car. The new model has a full stream-line body, cowl dash, sloping hood, rounded cellular radiator, a rain-vision ventilating windshield, top with jiffy curtains and a chassis designed to retain only the good points of the old car. The manufacturers state that since the new car has been announced the factory has been deluged with applications from former R-C-H dealers in all parts of the world whose confidence in the new corporation is such that sufficient actual shipping orders have already been booked to keep the factory running to full capacity for several months. In view of this fact a sales plan has been outlined which is said to be a radical departure from all former systems and exceedingly attractive to dealers the world over. Firms in position to handle the new car will do well to write at once for

## A Notable Shoe Manufacturing Plant

BROWN SHOE COMPANY, Inc., of St. Louis, Mo., U. S. A., have grown from a very small beginning to be one of the largest shoe manufacturing concerns in the world. Their present plant comprises 14 large specialty shoe factories, making 21 specialty lines, and with a combined capacity amounting to over \$17,000,000 annually. This suc-

cess is attributed by the president, Mr. George Warren Brown, to what may be called "team work." This is the feeling that the success and progress of the company depend upon the close report of each and every member of the force. In this spirit every one gives his best work, thought and action.

every retailer to whom they were shown. Then the factory began to grow. Larger quarters had to be found until now the concern is known throughout the civilized world. Brown Shoe Company, Inc., sell their product all over the United States and in many foreign countries. They are manufacturers of the well-known "White House Shoes" for ladies and gentlemen, "Buster Brown Shoes" for boys and girls and little women, "Dr. Sawyer Cushion Shoe" for ladies and gentlemen, "Maxine Elliott Shoes" for ladies, and "Westport Shoes" for men and boys, with two large factories devoted to the manufacture of men's, boys' and youths' work and semi-work shoes. The offices and salesrooms of Brown Shoe Company, Inc., are known as the "White House" (the name being taken from the White House in Washington, D. C.), and located in the heart of the new wholesale district on Seventeenth Street and Washington Avenue, and is one of the sights shown to strangers visiting St. Louis. The company maintain salesrooms in Paris, France; Naples, Italy, and Havana, Cuba; while in the United States they have salesrooms in St. Louis, Chicago, Kansas City, Pittsburgh, Baltimore, Detroit, Indianapolis, Cleveland, St. Joseph and Birmingham. For copies of the large and handsomely illustrated catalogues which picture and describe the entire line made by this concern, together with full particulars regarding export selling terms, address the manufacturers direct as above.

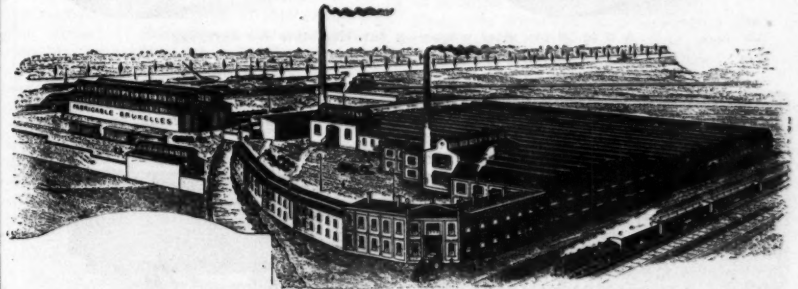
The firm known as La Société Belge pour la Fabrication des Câbles et Fils Electriques, S. A. (company for the manufacture of electric cable and wire), 70 Rue du Marché, Brussels, Belgium, has recently placed on the market a new pneumatic tire known under the trade name of "Fabricable." This tire was recently tested in a tour across France extending for 5,000 kilometers, as well as in a number of contests in France and Germany, and since there has been such a demand for it that the manufacturers have established branch offices or supply stations throughout Europe, Africa, Asia and South America.

The firm also manufactures in its industrial caoutchouc division a variety of other rubber products, including packing, gas and water tubing, tubing for steam, acids and kerosene and many similar specialties. In its division of tubes and accessories the firm makes insulating tubing of various kinds and in its cable division manufactures an extensive line of electric wire and cables. Its factory, which is located at Buysinghen, gives

employment to no less than 2,000 workmen, and being situated close to Brussels is well located to handle export shipments. The accompanying illustration shows a general view of the plant, which covers eight or ten acres. For descriptive circular and price list regarding these and similar products, address the manufacturers direct as above.

## Pneumatic Tires and Electric Wire and Cables

The factory at Buysinghen, near Brussels, Belgium, of La Société Belge pour la Fabrication des Câbles et Fils Electriques, S. A.



The factory at Buysinghen, near Brussels, Belgium, of La Société Belge pour la Fabrication des Câbles et Fils Electriques, S. A.

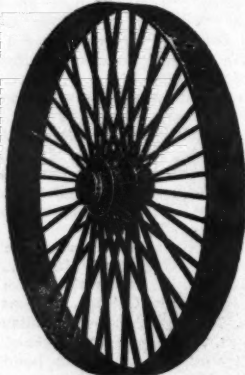
expert workmen, brought from Rochester factories (where the fine shoes of that day were made) were persuaded to leave their homes and venture out to St. Louis on condition that their railroad fares would be paid in advance.

The venture was a success, however, and Brown's \*5\* shoes won the approval of

employment to no less than 2,000 workmen, and being situated close to Brussels is well located to handle export shipments. The accompanying illustration shows a general view of the plant, which covers eight or ten acres. For descriptive circular and price list regarding these and similar products, address the manufacturers direct as above.

## The Durability of Steel Wheels

IN many parts of the world where there are great climatic changes, protracted periods of excessively wet weather being experienced at certain times and extremely hot, dry spells at others, many articles of wood construction suffer rapid deterioration owing to the alternate drying and wetting. This is especially noticeable in the various kinds



An "Electric" welded steel wheel

of vehicles, because of the necessary exposure to which they are subjected, and consequently the loosening of spokes, tires and felloes is a constant source of annoyance and expense. While the elimination of these troubles is a very important factor in stimulating the use of steel wheels it is by no means their leading feature, their much greater strength and durability and almost absolute independence of weather conditions constituting additional reasons among discriminating buyers that account for their steady increase in popularity with farmers, lumbermen and those having heavy articles to move from place to place.

Among the manufacturers of metal wheels

and the lumber and logging interests; and last, but not least, an efficient traction engine.

The illustrations given herewith show a few of the products of the company. No. 1 is a large extra strong "Electric" welded steel wheel, having a capacity of 8,000 to 12,000 pounds per set of four, and is designed for heavy traction and portable engines, dump carts, ore wagons and logging purposes. The number of spokes varies with the height, width of tire and capacity, and they can be furnished to fit any size of skein or style of axle, while if desired axles and skeins can be supplied with the wheels; No. 2 is a steel 6 to 20-ton wagon, a favorite style for carrying logs, lumber, etc.; No. 3 is a cross reach platform with box, for farm work and hauling coke, etc.; No. 4 is an extra heavy lumber and logging wagon, made especially strong to withstand rough service, while No. 5 is the "Allwork" tractor made by this firm. The sixth and last illustration shows a new auto trailer which has just been placed on the market by the Electric Wheel Company.

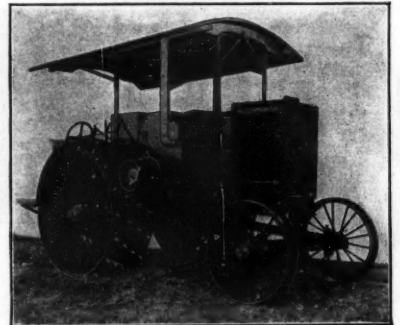
The "Allwork" tractor is claimed by the manufacturers to be lighter in weight and able to pull more than any other 40-horse power engine on the market. It is equipped with a four-cylinder vertical engine, having three speeds forward and one reverse and using either gasoline or kerosene for fuel. It will pull 5 to 6 plows or operate a 36-inch separator with a minimum consumption of fuel, and is so simple in construction that only one man is needed to operate and care for it. Great stress is placed upon the fact that it was designed especially for use on the small or medium sized farm, because of the widely varied tasks that can be undertaken with its assistance. It is very substantially built of the best material that can be obtained and all gearings are enclosed so tightly that dust and grit are absolutely excluded. A special steering arrangement is provided that responds quickly and easily and enables the engine to turn in a very short radius, a feature that will be much appreciated by most men who are familiar with

column is the latest addition to the Electric Wheel Company's extensive line and is adapted for all kinds of hauling. By means of this ingenious attachment, pleasure vehicles can be used for practical everyday work without being equipped with special bodies, as it



Extra heavy logging wagon made especially for rough service

can be attached to or detached from any automobile in five minutes and does not add to the expense of maintenance. It can be furnished with axle connections for all makes of automobiles. This firm state that they have been supplying auto trailer carts for

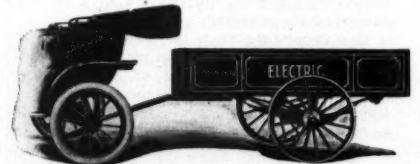


An "Allwork" tractor—equipped with 4-cylinder vertical engine

all kinds of purposes and in all capacities for a number of years, and they have proved money and time saving conveniences for either city or country work.

Farmers can use the Model "A" trailer cart in place of their wagons, thus saving an immense amount of time on the roads, and leaving the teams available for field work. Dairy and garden products can be delivered in town and small freight brought back to the farm without interfering with the accomplishment of a full day's work. Many farmers have marketed enough perishable products by means of this auto trailer to more than pay for the device within a short time. Hardware and implement dealers can use the trailer cart for making farm and country deliveries, and in fact merchants of all kinds find the auto trailer admirably adapted for making either country or city deliveries.

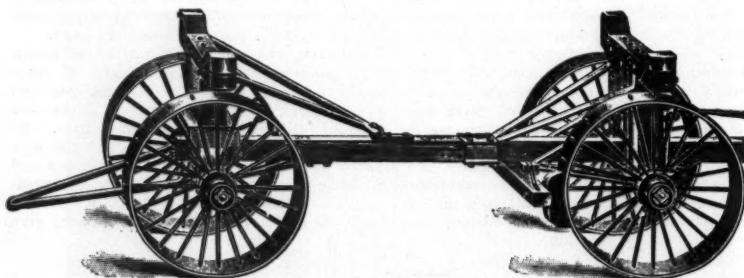
The manufacturers state that they will be glad to make a special proposition to dis-



New model "A" trailer cart for use with any make of automobile

trict agents in a position to handle this vehicle or an opportunity will be given to the first merchant in any locality who purchases one to represent this attractive line, provided an agency has not already been as signed in that territory.

For price lists, catalogues and special terms covering not only these trailer carts, but the various other specialties illustrated in this article and the extensive line of vehicles and wheels manufactured by this concern, those interested should write direct to the address given above.



A 6 to 20-ton steel wagon—a favorite style for carrying logs, lumber and other heavy loads

is the Electric Wheel Co., Station B, Quincy, Ill., U. S. A., whose electric welded steel wheels have acquired a well-merited reputation for their high quality wherever they have been introduced. These wheels are made in practically every size, and can be supplied to fit axles of any dimension and in capacity up to 20 tons per set of four. Many wagon owners are replacing their wooden wheels as they wear out with a set of electric welded wheels, and they thus obtain a stronger and more lasting vehicle at less than the price of a new set of wooden wheels.

While the Electric Wheel Company for many years confined their efforts to the production of these steel wheels, they have of late greatly increased the scope of their operations and now include in their output a great variety of logging wagons, log carts, dump carts, gasoline engine trucks, heavy trucks for mounting machinery, wheels for traction engines and practically every kind of vehicle used by the farmer, manufacturer

engines of this class. The company have prepared a number of very complete catalogues



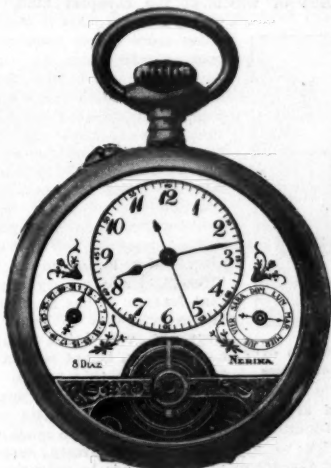
Cross reach platform with box for hauling coke, etc.

giving detailed descriptions of and illustrating these engines as well as their other products. The auto trailer shown at the foot of this



### A New 8-Day Watch

THE accompanying illustration shows the new chronometrical 8-day watch (Nerina Quantième), with large second hand in the center, which is being placed on the market by the Office International des Nouvelles Montres "8 jours," 90 Rue du Saint Esprit, Liège, Belgium. The new watch, which is claimed by the manufacturers to be the first fundamental innovation that has appeared in the watchmaking industry in many years, is said to possess a number of real advantages,



New eight-day watch with second hand and dials showing day of week and month

not the least of which is the fact that it requires winding only once every eight days. In addition it is provided with a large thin second hand pivoted in the center of the dial, which marks the time in fifths of a second the same as the most expensive stop watches, while on the right side of the dial are shown the days of the week and on the left side the dates of the month. The new watch is therefore, according to the makers, the most complete watch manufactured, since it gives the exact time to a chronometrical second during eight consecutive days with a single winding, and also shows at a glance the day of the week and the date of the month.

The movement, which is accurately finished and finely jeweled, is of the straight anchor



Special design for Nerina watch cases showing Berne monument to Postal Union

escapement type, with visible balance wheel, Breguet spiral spring and compensating balance. Before leaving the factory the "Nerina Quantième" watches are subjected to the most exacting trials in a special observation department, the same as is done with the high-

est-priced chronometers, and when placed on sale they carry an official certificate of good-running and a 5-year guarantee. The cases are strong and handsomely finished and close hermetically. They are made in five different styles; oxidized steel, gun metal finish, pure nickel and antique silver with artistic designs; also sterling silver, 0.800 standard, and 18-karat gold.

The manufacturers of these watches claim for them a very remarkable degree of precision. While an ordinary watch running from 24 to 26 hours is considered good if it varies only  $\frac{1}{4}$  of a minute per day, this watch is so constructed that it cannot vary over one minute at the end of the eighth consecutive day after a single winding. All of the parts of this watch are interchangeable—a feature that will appeal strongly to jewelers. The "Nerina Quantième" watches for men are made in only one size, the same as that shown in the illustration; but the firm also make another style of 8-day Nerina watches without the second hand and day dial, which is made in three sizes, for gentlemen, ladies and boys.

The second illustration here shown represents the "Nerina Simple Postale," the case of which is artistically decorated with a design representing the monument erected at Berne to the Universal Postal Union.

Jewelers, watchmakers and others interested in these new watches should write for catalogues and export terms immediately. The firm also desire to correspond with parties in position to act as their selling agent in all parts of the world. Trial orders for single watches will be accepted at the following prices: Nerina Quantième No. 1, oxidized steel, plain case, 50 francs; No. 2, pure nickel, polished case, 55 francs; No. 3, sterling silver, engine turned case, 60 francs. Delivered transportation and duty paid in any country. Address, Office International des Nouvelles Montres "8 Jours," 90 Rue du Saint Esprit, Liège, Belgium. Cable address, Leophilip, Liège.

### Farm Implements for all Purposes

M ESSRS. Parlin & Orendorff Company, of Canton, Ohio, U. S. A., announce that they have now ready for distribution a new catalogue printed in French, in which will be found illustrations and complete descriptions of their extensive line of agricultural implements. Included therein is a large number of walking and riding plows; harrows, both disc and tooth, potato planters and diggers, corn planters, cotton planters, rice planters, cultivators, listers, coverers, corn cutters, and other implements for farm or plantation use. A detailed description of a new equalizer to be used when a number of animals are employed to pull a plow or other implement is also given and forms not the least interesting portion of the contents of this pamphlet. The product of this concern has acquired an enviable reputation for reliability and superiority of design, qualities that naturally appeal to the practical agriculturist. Owners or managers of farms, plantations, ranches, etc., or others who are interested in implements or machinery of this class should obtain one of these catalogues, copies of which will be sent to any part of the world without charge. Address Parlin & Orendorff Co., Export Dept. D. R., Canton, Ill., U. S. A.

### An Economical Car for Parcel Delivery

THE many advantages over horse-drawn vehicles possessed by automobiles for delivery purposes are now so generally appreciated that their employment is rapidly extending to every line of business. So true is this statement that there are to-day but few large commercial houses that do not use them, either wholly or in part, for delivering goods to customers. With most of them the extent of their business renders the expenditure for a heavy and expensive auto car of the ordi-

nary type profitable, but there are many others to whom the cost of one of these vehicles would be prohibitive. Realizing the needs of the merchant dealing in lightweight merchandise and appreciating the enormous demand that was awaiting the appearance of a substantially built and durable motor car that would be inexpensive to operate and could be sold at a moderate price, the Motokart Company, of 1788 Broadway, New York City, U. S. A., after a long series of experiments, have been successful in producing a vehicle that apparently meets every requirement of business houses that have numerous small or lightweight packages to deliver.

This car, which the manufacturers have christened the "Motokart," is of very attractive appearance, and, as can be seen by the accompanying illustration, is possessed of a number of original features. The car shown is of the open-body type, the dimensions of which are 50 x 30 inches, but the company also make a car with an enclosed body 51 x

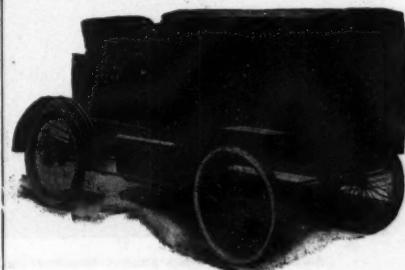


General appearance of the open body "Motokart" delivery wagon

32 x 32 inches in size. Notwithstanding the moderate price at which the "Motokart" is sold, nothing cheap enters into its construction, and the claim is made that its operation is so economical, not alone because of low cost of running, but also because of the time saved in making deliveries, that it is only a question of time before it will entirely supersede the horse-drawn vehicle for delivering lightweight merchandise.

Exceptional attention has been given to ensuring maximum strength and durability in the "Motokart." The frame is of pressed steel of channel formation; the springs are semi-elliptic, strong, durable and extremely resilient, so that the most delicate merchandise can be carried without fear of injury; the engine is of 10 to 12 h. p., two-cylinder four-cycle type, water-cooled; the wheels are of wire construction, ball bearing, with 26 x 2½ inch non-skid tires; the wheel base is 69 inches and the tread 44 inches, which size has been found most convenient for handling the vehicle in crowded streets; the capacity is 400 pounds and the speed from 4 to 25 miles per hour.

From the foregoing it can be seen that the "Motokart" is a car that is ideal for the purpose for which it is designed, and



Closed body "Motokart" used for delivering lightweight packages

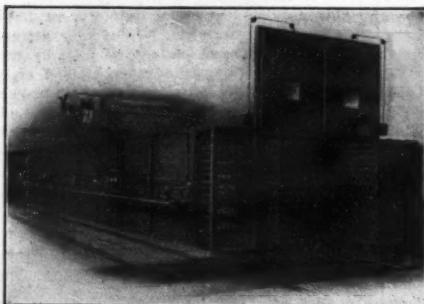
merchants who have numerous packages to deliver of the class mentioned above, would do well to investigate its merits. The company will send catalogues, price lists and all other information required to any interested party upon receipt of name and address.

## Drying Machinery for All Purposes

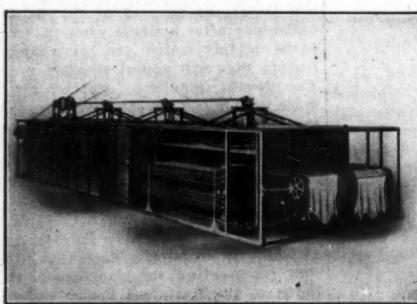
**E**LIMINATION of moisture has always been of great importance in many manufacturing processes, and methods by which this could be perfectly and uniformly attained have received much care and attention. Among the leading industries in which this is especially true may be mentioned manufactures of textiles, tobacco, veneers, fibre boards, yarns and paints and tanners of leather. At one time much dependence was placed upon drying the various materials by

the skins are hung on a truck. The advantages of this dryer are the absolute certainty of the results, economy of floor space, steam and power, the small amount of attention required, and the elimination of the liability of damage through the employment of careless help.

Besides the above the Philadelphia Textile Machinery Company manufacture machines specially designed for the drying of pulled wool, scoured wool, cotton stock, hair, white lead, paints, filter press cakes of all kinds, tobacco, hosiery and underwear, veneers, yarns, binders' boards, straw boards, leather



Tunnel truck dryer for white lead, paints, colors and filter press cakes of all kinds



Leather dryer in which the skins are thrown over poles and the poles placed in chain conveyors

exposure to the sun, but this was never altogether satisfactory because of the lack of uniformity and the occurrence of more or less protracted periods of cloudy or wet weather. After this, what was known as the drying room was generally used, but this was expensive because of the space occupied, the great amount of time consumed and also because of the difficulty of maintaining the exact temperature necessary to secure the best results. To these objections and also to the wonderful expansion in manufacturing, that called for means by which this work could be done rapidly, economically and with absolute uniformity are due the efforts made in recent years to produce a machine that would meet these requirements.

Experience has shown that no single machine answers for every purpose, but the Philadelphia Textile Machinery Co., Hancock and Somerset Streets, Philadelphia, Pa., U. S. A., who for many years have made a specialty of the manufacture of drying machinery and who are one of the leading concerns in this line in the world, claim to include in their extensive output practically everything that may be needed for the efficient and rapid drying of any kind of materials during the process of manufacturing. As an instance illustrating the perfection to which they have brought their various machines may be cited the "Proctor" leather dryer for the use of

boards, fibre boards, asbestos and other fibrous pulp boards, woolen and cotton cloths, as well as a line of centrifugal drying and scouring machines. All persons or firms having drying problems to solve, will do well to write the company stating their requirements and asking for literature regarding the machinery most suitable for their needs.

## An Extensive Line of Metal Manufactures

**M**ESSRS. Charles Clifford & Son, Ltd., Birmingham, England, who were established in 1776, have long enjoyed a high reputation among engineers, shipbuilders, manufacturers of motors, electrical engineers, engine builders, sugar refiners, brewers, art metal workers, etc., in all parts of the world for the high quality of their manufactures of metal and metal specialties, and among their largest customers are the British Admiralty, the War Office, Crown Agents, railway companies and shipbuilders.

Among the products of this firm are rolled metals and sheets of all sizes up to 4 feet 6 inches wide of copper, brass, gilding, tin, manganese, phosphor bronze and other alloys; brazed or solid tubes drawn from  $\frac{1}{4}$  to  $7\frac{1}{2}$  inches in diameter of copper and up to 6 inches in diameter of brass, as well as smaller sizes in bronze, gun metal, tin, etc., and brazed brass round and square tubes for manufacturers of metal bedsteads; wire of all sizes and of all kinds of metal, except iron and steel; rolled or drawn rods, in rounds, hexagon, squares and shaped, the rounds being rolled up to  $5\frac{1}{2}$  inches in diameter. A specialty is made of high strength metals, such as manganese bronze and phosphor bronze for pump rods, etc., tests of which have given 32 to 35 tons tensile strength per square inch with 25 to 30 per cent. elongation in two inches.

The company has recently erected a well-equipped foundry for the making of castings of all kinds of non-ferrous metals and the production of high strength brass with a tensile strength up to 40 tons per square



An automatic soap cooler, crusher and dryer

inch. The manufacture of phosphor tin and phosphor copper is another specialty which this firm produces in large quantities. Manufacturers of machinery or other articles using the above products are invited to write Messrs. Clifford & Son, Ltd., for catalogues, prices and other information, addressing them as above.

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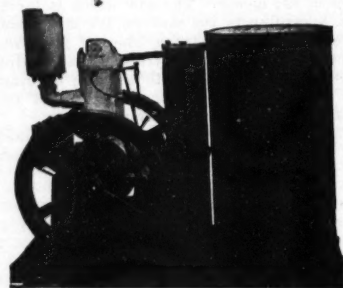
## An Economical Kerosene Engine

**T**HE Kerosene Power Company, 2840 Fremont Avenue South, Minneapolis, Minn., U. S. A., are the manufacturers of an engine that has been the subject of considerable favorable comment, on the part of those to whose attention it has been brought, because of its possession of a number of unusually desirable features, among which are a very moderate price and exceptionally low cost of operation. The fuel used is kerosene, from a gallon of which of the cheapest kind, the

manufacturers state it will develop more power than other engines will from an equal quantity of the highest grade gasoline. This is undoubtedly a great advantage, and makes this engine particularly suitable for use in countries where the latter is difficult to obtain, kerosene being easy to get in practically every part of the world and much lower in price.

The simplicity of this engine, which is known as the "Hero," is also a very important feature. It has no chains, valves or gears to break or wear out, and, being without a carburetor, is not subject to troubles from this source. It starts from an electric spark, and after a few minutes runs on its own self-ignitor, which is claimed to be much superior to any magneto or battery system. The absence of vibration when in operation is particularly noticeable in this engine, and it therefore needs no bolting or tying down. This is a great convenience when the engine is mounted on a truck, as is frequently done on farms, where power is needed for a variety of purposes and at numerous different places.

This engine is very substantially built and as there are but few working parts it is extremely durable and not liable to breakage. It is made in a number of sizes, and in designs suitable for use on yachts, and farms,



A "Hero" kerosene engine manufactured by the Kerosene Power Company

in factories, or in fact, anywhere a moderate amount of power is required. The manufacturers are so confident of the durability of this engine that they give a binding guarantee against any breakage due to defects for five years. Those desiring further information regarding this engine should write to the above address for catalogues and other particulars.

Mr. E. W. Alderman, an experienced refrigerating engineer who has been connected with the Vilter Manufacturing Company for a good many years, has been appointed manager of the Pittsburgh district and will have his headquarters at 314 Curry Building, Pittsburgh, Pa. He succeeds Mr. H. W. Loecher, who has been transferred and will be located at the main office in Milwaukee. Mr. Alderman is well prepared to serve the trade in that territory and, with the exceptional facilities of the Vilter Manufacturing Company for turning out any machinery or equipment required for ice-making or refrigerating plants, the trade is assured prompt and efficient service.



## A Remarkable Sewing Machine Improvement

THE accompanying illustrations show the results of many years of untiring effort on the part of the National Sewing Machine Company, of Belvidere, Ill., U. S. A., and represent what is probably the final step needed to bring the sewing machine to a state of absolute perfection. This concern have always enjoyed an enviable reputation for the quality of their product, and have been among the leaders in producing the countless improvements in designs and equipment that

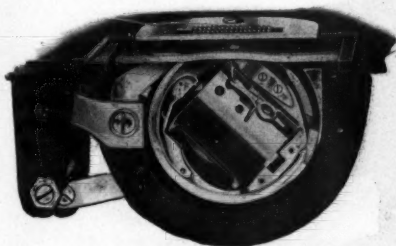


Fig. 2.—Showing spool case in position ready to sew

have made the sewing machine what it is to-day.

They were the first to perfect a rotary machine that is actually non-cloggable and equipped with a tension that adjusts itself, automatically, to all sizes of thread, insuring a perfect stitch on any and all classes of goods with unlimited range from the thinnest chiffon to the heaviest goods that can be passed under the presser foot.

The introduction of the first successful machine of this class was due to the mechanical genius of the engineers connected with this company and the liberality with which expenditures were made for any purpose that promised to improve the quality of their product.

To the faithful maintenance of this policy is undoubtedly due the development of the Eldredge Two-Spool Rotary Sewing Machine, which marks a new epoch in the manufacture of this indispensable necessity of modern life. This is an improvement that has been sought for ever since the first machine was produced, and though practically every manufacturer of sewing machines for the past fifty years has been endeavoring to make a machine in which the bobbin was eliminated and that would take the thread from an ordinary commercial spool, both top and bottom, success was not won until the latest product of the National Sewing Machine Company was placed on the market.

That everyone who uses a sewing machine will welcome the new arrival is certain, for

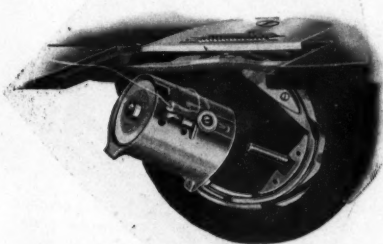


Fig. 3.—Showing method of removing and replacing spool case

this machine has not only the advantage of using a commercial spool of thread in the bobbin case, but is actually more simple and reliable in its work than any other type of rotary sewing machine on the market, none of which can use a bobbin that will hold more than 50 yards of thread. This alone would represent a feature of marked superiority over any other kind of machine, and

be sufficient to place it in a class by itself, the fact that the two spools of thread are equal in length causing the upper spool to show the amount on the lower and thus doing away with the annoyance of the thread running out unexpectedly in the middle of a seam.

But this is only one of the many advantages possessed by the Eldredge Two-Spool Sewing Machine, there being, for instance, a take-up that is entirely new in design, making possible and practical the two-spool machine by forming the large loop of thread required to pass around the spool case. This ingenious device is patented and will not be found in any other machine. Then, again, the Eldredge two-spool machine will make stitches of any length, from four to forty to the inch, which is a greater range than is possible with any other family machine, while the automatic, self-locking stitch regulator changes the length of stitch instantaneously.

Attention is also called to the fact that this machine is equipped with an absolutely automatic tension, which adjusts itself instantaneously to any size thread and to any kind of material that is being sewed. This important feature is also exclusive with the Eldredge Two-Spool Sewing Machine. The design of the machine is such as to allow for ample clearance in the hook race, thus allowing the thread to pass freely around the spool case and giving assurance of absolute freedom from the clogging, snarling or breaking so frequently met with in machines of other makes.



Fig. 1.—The complete machine with automatic golden oak cabinet

In the new Eldredge machine the designers have given much attention to providing ample facilities for examination of the different working parts, and accessibility to the stitch forming mechanism is a particularly advantageous feature, allowing, as it does, the instantaneous removal or replacing of the spool case from above. It also enables the operator to clean the underpart of the sewing head or to remove particles of cloth, thread or other foreign substances therefrom with the greatest ease.

But in the literature describing their new production the manufacturers do not neglect to place stress upon the remarkable extent to which it economizes in time and labor. They point out that the bobbins in other rotary machines have an average capacity of less than 50 yards, while the Eldredge two-spool, taking the lower thread from an ordinary 200-yard wood spool, does more than four times the amount of stitching, without rethreading and with no winding of bobbins. While the winding of bobbins is entirely eliminated, a spool winder is provided, that will allow thread to be wound on an empty spool, which will be found of considerable convenience in instances where a small quantity of colored thread is to be used or only a single spool of thread is available.

The illustrations given herewith show very clearly the simplicity of the working parts and the handsome appearance of the new Eldredge Two-Spool Sewing Machine. No. 1 is

the complete machine with automatic golden oak cabinet; No. 2 shows the spool case in position ready to sew; No. 3 shows the method of removing and replacing the spool case; No. 4 gives an upper view of the sewing head; and No. 5 shows the sewing head, looking from beneath.

The Eldredge Two-Spool Machine has progressed far beyond the field of experiment and has proved itself to be a practical em-

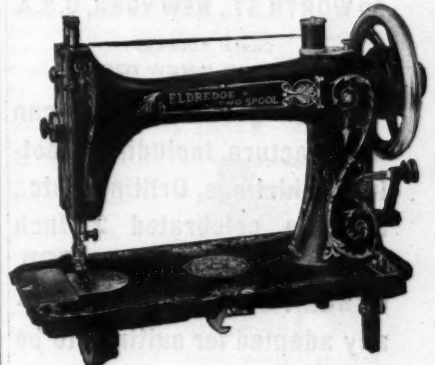


Fig. 4.—The sewing head (upper view)

bodiment of the perfect rotary principle of construction. It is the result of years of patient and unceasing work—work that has never ceased until the goal strived for had been successfully attained. Its simplicity and ease of operation leave nothing to be desired, as it eliminates entirely the necessity of expert knowledge called for by almost every other kind of machine. The equipment that accompanies each machine is of the finest and most substantial character, and cannot be excelled, either in design, construction or finish. The attachments are the highest quality Greist, whose standard has never been questioned, while the ball-bearing stand is extremely attractive in appearance, strongly built and very easy to move from place to place.

In addition to the new Eldredge two-spool sewing machine above described and illustrated, the National Sewing Machine Company manufacture a complete line of standard sewing machines of all types in many attractive models. These are illustrated in a comprehensive catalogue, a copy of which will be sent to any part of the world free on request. The firm state that their total output is over 1,200 machines per day and that responses from dealers who have received sample shipments of the Eldredge two-spool machine are uniformly enthusiastic and indicate a wide and enduring popularity for this model as soon as its merits become generally known.

The manufacturers announce that they are

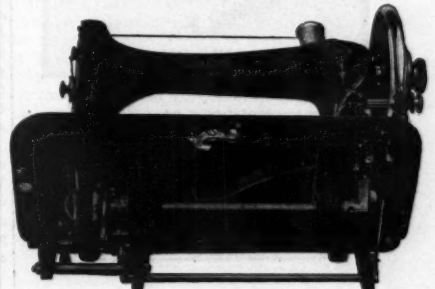


Fig. 5.—The sewing head (under view)

now ready to grant exclusive selling agencies to responsible persons or firms in all parts of the world where they are not at present represented, and wide-awake dealers desiring to participate in the great demand that has been created by the appearance of the new machine will do well to lose no time in writing for terms and other particulars, addressing them as above.

## G.A. STAFFORD & Co.

Commission Merchants

39 WORTH ST., NEW YORK, U.S.A.

CABLE ADDRESS:  
"GASCO," NEW YORK

Cotton goods of American Manufacture, including Sheetings, Shirtings, Drillings, etc., and the celebrated 27-inch Dog's Head Drill No. 300 DRIL CABEZA DE PERRO), especially adapted for suitings to be worn in tropical and semi-tropical countries. Improves with washing; wears well, and looks well; **BEWARE OF IMITATIONS!** Ask for it at the stores—if not obtainable, write us sending name of your dealer. Each piece of genuine goods bears the well-known Dog's Head label, printed in English, French or Spanish, with our signature as below:



### The "Magic Lantern" Superseded

SOME years ago a popular form of entertainment was the "magic lantern" exhibition given by churches, schools, lodges, etc., but the crudeness of the subjects, which had to be prepared entirely by hand, and the expense of their production proved to be insurmountable obstacles and their general use finally became a thing of the past. There

was no decrease in the desire of the people to view interesting and attractive objects projected upon a screen, but the high price of the slides, their weight and their liability to breakage while being transported from place to place, rendered the number of available subjects limited, so that there was much repetition and it finally became difficult to secure an audience.

It was at one time thought that the introduction of the so-called postcard projector, or device for projecting enlarged images of opaque subjects by reflection upon a screen, would provide a satisfactory substitute for the old type of magic lantern, but it is claimed that the difficulty of securing clear-cut, distinct and brilliant results by this method, soon eliminated it from serious consideration.

The Victor Animatograph Company of Davenport, Iowa, U. S. A., however, now announce that with the advent of their "Viopticon" all objections of whatever nature have been entirely overcome, as it will fulfill all the requirements of the ordinary stereopticon as well as provide a number of advantages peculiar to itself. The Viopticon is so simple that any child can operate it, all that is necessary being the screwing on of an electric lamp socket and the insertion and removal of the slides. Where electricity is not available, however, a small acetylene gas equipment can be supplied, and the total weight of either style outfit is only 15 pounds.

The slides used in the Viopticon are very small, measuring only  $2\frac{1}{4} \times 2\frac{3}{4}$  inches on the outside, thus reducing materially their cost, and as they are made entirely by a photographic process the subjects are reproduced upon the screen with the utmost detail and perfection. One great advantage possessed by this device is the fact that while the manufacturers can supply slides, either plain or in colors, covering thousands of subjects, including history, biography, educational and religious views, science, art, geography, travel, literature, comic, juvenile, etc., at a very moderate price, owners of a Viopticon can also have reproduced at slight cost any object that they themselves photograph. For this reason the Viopticon has become very popular among churches, lodges, clubs, salesmen, who want to show the article they are selling; travelers who like to preserve scenes of special interest, and schools for educational purposes. In this connection the Viopticon is provided at a slight additional cost with a microscopic attachment which enables the object in an ordinary microscopic slide to be projected, greatly magnified, upon a screen.

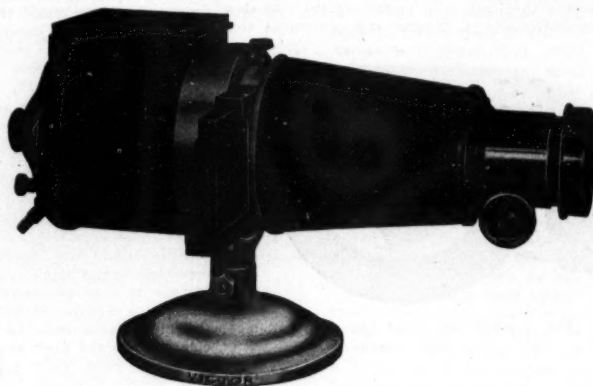
A very interesting catalogue illustrating and describing more fully the merits of the Viopticon has been prepared for gratuitous distribution by the company, and those interested in an article of this nature can obtain a copy by writing the company direct to the address given above.

### Gentlemen's Furnishings

W. O. HORN & BROTHER, 846 Broadway, New York, U. S. A., announce that they have now ready their fall and winter line of gentlemen's furnishings, included in which will be found all the latest styles of neckwear in an almost endless variety of colors and designs, made up in silk, lawn and other materials, knitted silk neckwear, bath and lounging robes, vests for evening and

day wear, hosiery, underwear, garters, fancy and plain mufflers, mackinaws, automobile and steamer rugs, and many other specialties.

The firm call attention to their assortment of presentation sets, which are put up in various combinations, to sell at a wide range of prices, among them being two-piece sets consisting of a necktie and pair of hose; three-piece sets, consisting of a necktie, pair of hose and handkerchief, and full dress sets, containing knit reefer, black bat wing tie, white lawn bat wing tie and a pair of black



A Victor "Viopticon"—a picture projecting machine that is very popular

silk hose. All of them are packed in very attractive boxes and are perfectly matched in a very extensive variety of colors. They are extremely popular for presents and are sold in great numbers during the holidays.

This firm are doing a very large business through the mails, and have ready for distribution a catalogue in which is given a complete description and illustrations of their entire line, thus enabling their customers



One of the latest styles of neckwear manufactured by W. O. Horn & Bro.

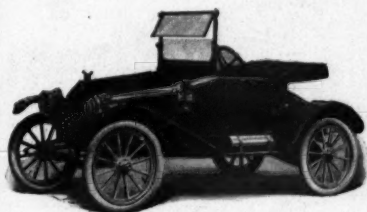
located at distant points to make their selections without trouble or delay. They guarantee the quality of all goods and state that the prices are the same as would be made if the orders were personally placed.



## A New Model of a Popular Low-Priced Car

THE manufacturers state that the new body design of the Metz "22" has greatly increased its popularity. It is of the streamline type, with wide fore doors and roomy, luxuriously upholstered seats. As the two accompanying illustrations show, the new model enables dealers to offer their clients a roadster of exceptional grace and beauty at an exceedingly low price.

A very attractive feature that has been added to the Metz in its new form is a plate

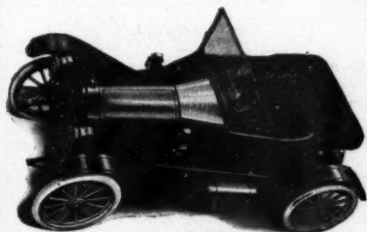


The new 1915 model Metz roadster

glass rain-vision windshield, constructed in two sections, each adjustable for rain and ventilation. The gasoline tank is now carried in the cowl instead of behind the seat, as formerly, and the new equipment includes a Prest-O-Lite tank.

No change has been made in the motor or other working parts, as the conspicuous performance of the Metz in various official endurance and hill-climbing contests indicates clearly that its mechanical construction has been developed practically to the degree of perfection.

By way of adding to the impressive collection of cups and trophies which it already



The seats are roomy and comfortably upholstered

holds, and successfully defends, the Metz "22" captured the Utica Automobile Club trophy, which was the prize contested for in the Second Annual Hill Climb, conducted under the auspices of this club at Richfield Springs, N. Y., on July 4, 1914.

Metz cars won both the Class "A" and Free-for-All events. In the former the first four winners were Metz cars, and in the Free-for-All Metz cars won first, second and third places. The time for the Free-for-All was as follows:

Order	Driver	Car	Time
First	John Guiney	Metz "22"	0:55 1/2
Second	C. Walter Metz	Metz "22"	0:58 1/2
Third	James Connelly	Metz "22"	0:57 1/2

During the running of the contest Metz cars were driven at times at the rate of 58 miles per hour, setting a new record for this hill, which is seven-eighths of a mile long.

Aside from the fact that the Metz "22" won the last Glidden Tour, which was an eight days' contest, and also the three-mile hill-climb at Uniontown, Pa., in June, against a field that included 90 horsepower racing models, this latest victory seems sufficient in itself to justify the policy of the Metz Company in equipping its cars with an engine powerful enough to develop virtually one horse power for every 50 pounds of weight—which is greatly in excess of the power commanded by the average car.

The manufacturers direct particular attention to the fact that the remarkable success of the Metz in ordinary road work and in hill-climbing contests is largely due to its gearless transmission, which enables it to take instantaneous advantage of every variation in road conditions, without putting strain on engine or tires, and without the customary loss of headway.

Many a race is lost because of a clutch that slips at the crucial moment—or all the time, for that matter—but with its gearless transmission the Metz has no clutch to slip.

For new illustrated catalogue "Y" and price list of the new Metz "22," address Metz Company, Waltham, Mass., U. S. A.

## A Complete Line of Steam and Water Valves

THE Wm. Powell Co., of Cincinnati, Ohio,

U. S. A., are distributing a revised and up-to-date catalogue in which is illustrated and described their extensive line of steam and hot water heating valves and other engineering specialties. Included therein will be found the specifications on an unusually wide variety of high grade valves, among them the Powell "Union" composite disc check valve, composite disc valves, composite disc corner valves, composite disc radiator valves and the Powell extra heavy iron body straightway "Y" blow-off valves. Various kinds of metal are used in the construction of these valves, such as iron, bronze and brass, but especial attention is called to the superior quality of those in which certain parts are made of white "Powellium" bronze, a metal that offers remarkable resistance to corrosion. Everyone interested in a line of dependable engineering specialties should write for a copy of this catalogue, as it will prove of great assistance in ascertaining the proper valve to use for any particular purpose, addressing the manufacturers as above.

## Interesting School Desk Facts

THE success of American manufacturers developing trade in foreign countries depends as much on properly packing the goods as making the goods, for good goods poorly packed are really less valuable to the foreign purchaser than poor goods successfully packed; since in one instance he will have furniture that can be used even though it may not satisfy him in every respect; whereas in the other instance, goods that were made properly in the first place reaching destination in bad condition are of no service.

The science of packing has undoubtedly been solved by the E. H. Stafford Manufacturing Company, of Chicago, Ill., whose years of experience in the export market have enabled them to develop methods of packing their furniture so it will reach the foreign purchaser in perfect condition.

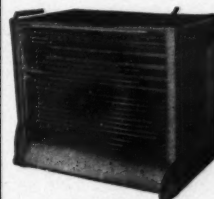
In the department of their factory devoted to the manufacture of school desks, it is to be seen that great care has been taken to develop a type of school desk that will knock down complete, pack compactly, and yet when it reaches the purchaser can be quickly assembled by any ordinary workman into a desk that will stand perfectly rigid, be durable, and ready for twenty years or more of continuous daily service.

Comparison with desks of other manufacture evidences that the method of attaching the wood top, seat and back to the iron standards gives five times the holding surface of any other school desk made.

Illustration No. 1 shows a desk partly "knocked down" for packing. Substantial iron buttons on the metal frame engage undercut dove-tail slots in the wood in a manner that would enable a common laborer with an ordinary wooden mallet to assemble the desk as quickly as could an experienced, expert carpenter with all the tools he might command. After the desk is erected the book shelf cannot be removed, although no screws are required to hold it in position. All joints in the wooden portion of the desk are securely tongued and grooved before gluing.



Desk partly "knocked down"



Wood parts compactly packed

does not show the paper packed between them to prevent chafing in transit.

Illustration No. 3 shows the close space in which the castings nest for shipment, the packing material being omitted from the illustration in order to show the position the castings occupy in the cases.



Castings nested for shipment

An interesting evidence of their successful packing methods for export shipment occurred recently when it was necessary to return a shipment from Europe that had reached its destination but had not been opened by the purchaser. The returned shipment arrived at the factory in such condition that the goods were placed in stock immediately and the cases used for another shipment then being assembled for South Africa.

The same method of packing applies to their opera chairs, which they make in great quantities. Over twenty styles of school desks and over thirty styles of opera chairs enable this company to supply the wants of anyone requiring seating for schools, assembly rooms or theaters.

The address of the company is the E. H. Stafford Manufacturing Company, 218 South Wabash Avenue, Chicago, Ill., U. S. A.

## PIANOS AND PLAYER PIANOS OF SUPERIOR QUALITY

The result of many years of effort and thoroughly tested in all climates

Magnificent Instruments at Fair Prices

Catalogues and further information always at your service

WINTER & CO.

SOUTHERN BOULEVARD  
NEW YORK CITY, U. S. A.

## Have you a clean, attractive Water Supply?

YOU can transform the dirtiest water into bright, clear, sparkling water; you can remove odor or taste, making the water pleasant and safe to drink if you will use a

### LOOMIS-MANNING FILTER

The reason why these filters have come to be recognized as the leading filters for use in office buildings, hotels, hospitals, country homes, city homes and all kinds of manufacturing establishments may be stated briefly as follows:

#### Simple to Operate

The filter is cleansed by reversing the flow of water, which is accomplished by the movement of one lever operating the Manning Single Controlling Valve. This valve makes the care of the filter very simple and makes mistakes impossible.

#### Effective Results

The filter produces splendid results over long periods of time because the filter bed is kept in good condition by our system of cleansing it. The Loomis Cutting plate through which the bed passes under the action of the washing current breaks up the bed so that every particle is cleansed. The entire bed agitates every time it is washed. All accumulations are driven off through the waste line and the sight glass into any convenient sewer or drain.

#### Durable Construction

Only materials which will withstand the corrosive action of water to the highest degree are used in the construction of this filter. The outside casing is cast iron, the Manning Single Controlling Valve is solid bronze, the screens are tinned copper, pipe work is either galvanized iron or brass as desired.

## They Filter All the Water

The entire water supply entering a building or residence, the water used in manufacturing, for bottling purposes or for boiler use can be made bright, clear and attractive. The filter is attached to the main supply pipe so that every drop of water passes through it. Full instructions for connecting up and for operating are sent with each filter.

The filters are built in many different sizes, styles and capacities. Inquirers should state the quantity of water desired to be filtered per minute or per hour, the condition of the water to be filtered, the pressure available, and the size of their supply pipe.

### Loomis-Manning Filter Mfg. Co.

131 South 16th Street

Philadelphia, Pennsylvania, U. S. A.

Cable Address: LOOMISMAN, W. U. T. Code

## Helping Electrical Supply Dealers to Get More Business

A NOTEWORTHY feature of the advertising campaign of the Robbins & Myers Company, of Springfield, Ohio, U. S. A., manufacturers of electric fans and electric motors of all kinds, is the manner in which the firm co-operate with their dealers. The company, in addition to using space in publications of world-wide distribution with display advertisements designed to educate the public to the advantages of electric fans and motors, have organized an extensive service for the direct benefit of each dealer in his own locality.



Window transfer

A complete series of advertisements suitable for newspapers have been prepared which the dealer can use over his name and address. Matrices or electrotypes are furnished free to the dealer with which he can have these advertisements reproduced in his home papers. The copy for these advertisements is prepared by experts of world-wide reputation so as to give dealers the benefit of the best copy that can be produced. When the dealer uses this copy, he has reasonable assurance that he will get good results, that his space will be utilized profitably.

A set of handsomely printed booklets and folders in colors have been prepared which show, in a very complete and convincing way, the many advantages of electric fans and motors in the home, office, store and factory. These booklets are suitable for handing out across the counter or for enclosing in the dealer's mail. They are furnished free in quantity with the dealer's name and address printed on the front cover. In addition to the descriptive matter, the advantages of the goods are shown by means of illustrations which were prepared by the best artists that could be obtained for work of this class.

The dealer's window is one of his best advertising assets and one which costs him

sent their order all the way to Germany to get the work of a concern which is noted the world over for the high class of window transfer signs they produce.

A card along the same lines as the window hanger has also been prepared for street car advertising, which is supplied dealers in the quantity they require.

The popularity of the modern motion picture show has made the motion picture theater one of the best places to catch the public eye. In response to a demand from Robbins & Myers' dealers for something they can use



Motion picture theater slides

in these theaters, a set of lantern slides have been prepared which are furnished free to dealers, with their names lettered in on them. These slides are photographed in colors and



Street car card

make a very striking and attractive appearance on the screen. From the large number of requests which have already been received for the slides, this promises to be one of the most popular of all the advertising helps the company has prepared for dealers.

The foregoing are only a few of the many ways in which The Robbins & Myers Com-



Booklets supplied with dealer's imprint



Samples of newspaper advertisements

nothing extra for advertising—in fact, if used judiciously it should go a long way toward paying the dealer's rent for him. To help dealers make the most of this asset The Robbins & Myers Company have prepared a window hanger and transfer sign which show the products in color. To get the very best work on the transfer sign the company

pany are co-operating with live up-to-date dealers, and firms in any part of the world who are handling electrical specialties, or are in a position to do so, are invited to correspond with this company in order to get full particulars regarding this service, together with catalogues and price lists of its extensive lines.



